

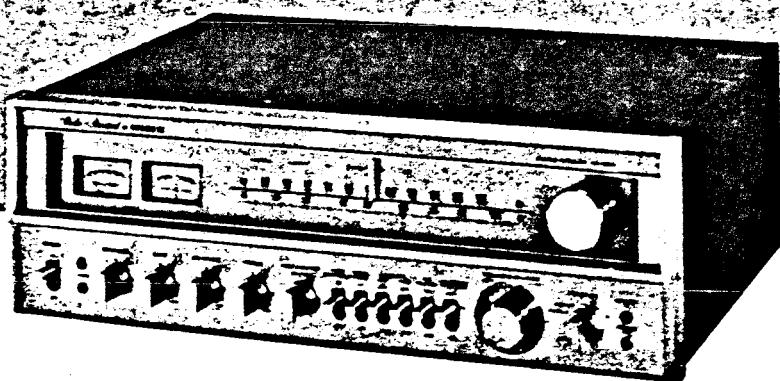
SERVICE MANUAL



FISHER

RS-1058

**Stereo Receiver
(EUROPE)**



FIRST NAME IN HIGH FIDELITY

TABLE OF CONTENTS

Disassembly Instruction	3
Exploded View of Cabinet and Chassis	4
Front & Rear Mounted Assemblies	5
Exploded View of Chassis Bottom Mounted Assemblies	6
Parts List	7
Recommended Test Equipment	8
Specifications	9
AM-FM Multiplex Alignment	10
AM-FM RF/IF MPX Board Layout	11
Alignment Wave Forms	11
Dial Cord Stringing	12
Block Diagram	13
AM-FM RF/IF MPX P.C. Board	14
AM-FM RF/IF MPX P.C.B. Assy Parts List	15,16
FM Tuner Section Characteristic Curve	15
AM RF IF IC HA1138 Signal Flow	16
FM IF IC LA1222 Signal Flow and Equivalent Diagram	17
FM IF IC LA1230 Signal Flow	17
FM MPX IC LA3350 Signal Flow	18
Pre Tone P.C.B. Assy Parts List	19,20
Tone Control and Mode Selector P.C. Board	19
Tone Control Characteristic Curve	21
Power AMP Section Characteristic Curve	22
Power AMP P.C.B. Assy Parts List	23,24
Power AMP P.C. Board	25
EQ P.C. Board and Assy Parts List	26
Power Supply P.C. Board and Assy Parts List	27
Protector P.C. Board and Assy Parts List	28
Dial Lamp P.C. Board and Assy Parts List	29,30
Point to Point Wiring Diagram Top View	31,32
Point to Point Wiring Diagram Bottom View	33,34
Schematic Diagram	

DISASSEMBLY INSTRUCTIONS

Removal of Chassis from Cabinet

1. Remove 4 screws from left and right sides of cabinet.
2. Separate cabinet from chassis.
3. Remove 18 screws from bottom of cabinet. (Do Not Remove Leg From Bottom Of Cabinet).
4. Separate bottom of cabinet from chassis.

Removal of Front Panel Assembly

1. Remove all Knobs
2. Remove 4 screws from top of panel.
3. Remove 5 screws from bottom of Panel.
4. Remove nut from "Function", "Speaker" and "Tape monitor" switches located on Front Panel Assembly.
5. Separate Front Panel Assembly from chassis.

Removal of Meters

1. Remove One screw and Meter Cover.
2. Unsolder leads from meter terminals.
3. Grasp Meter firmly and pull back separating Meter from panel.

Removal of Slide Rail Pointer

1. Remove Metal Slide Pointer from Slide Rail Pointer.
2. Remove 2 screws from top of Slide Rail Pointer.

Removal of AM-FM Stereo Function Indicator Lamps

1. Grasp base of lamp with long-nosed Pliers and Carefully extract from grommet holder.
2. Unsolder AM-FM Indicator Lamp from P.C. Board.

Removal and Replacement of Dial Lamps

1. Remove Dial P.C. Board from Shelter Light with two flaps straight.
2. Grasp Dial Lamp and extract from lamp grommet holder.

Removal of Front End

1. Unscrew 2 screws from Drum. (Do Not Remove Dial String From Drum).
2. Remove 4 screws releasing clip holding Front End.
3. Remove 4 screws from bottom of Front End.

Testing and troubleshooting any of the P.C. boards do not require removal since all component parts are top board mounted. For underneath board inspection purposes or when a defective component is to be unsoldered and replaced, the P.C. board can be sufficiently turned over by only removing the hold down hardware. Where it necessitates complete removal of any individual board then proceed as follows.

Removal of AM-FM RF/IF/MPX Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 4 hold down screws.

Removal of Power Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 5 hold down screws.

Removal of Power Supply P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 4 hold down screws.

Removal of EQ-Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 5 hold down screws.

Removal of Speaker Protection P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 5 hold down screws.

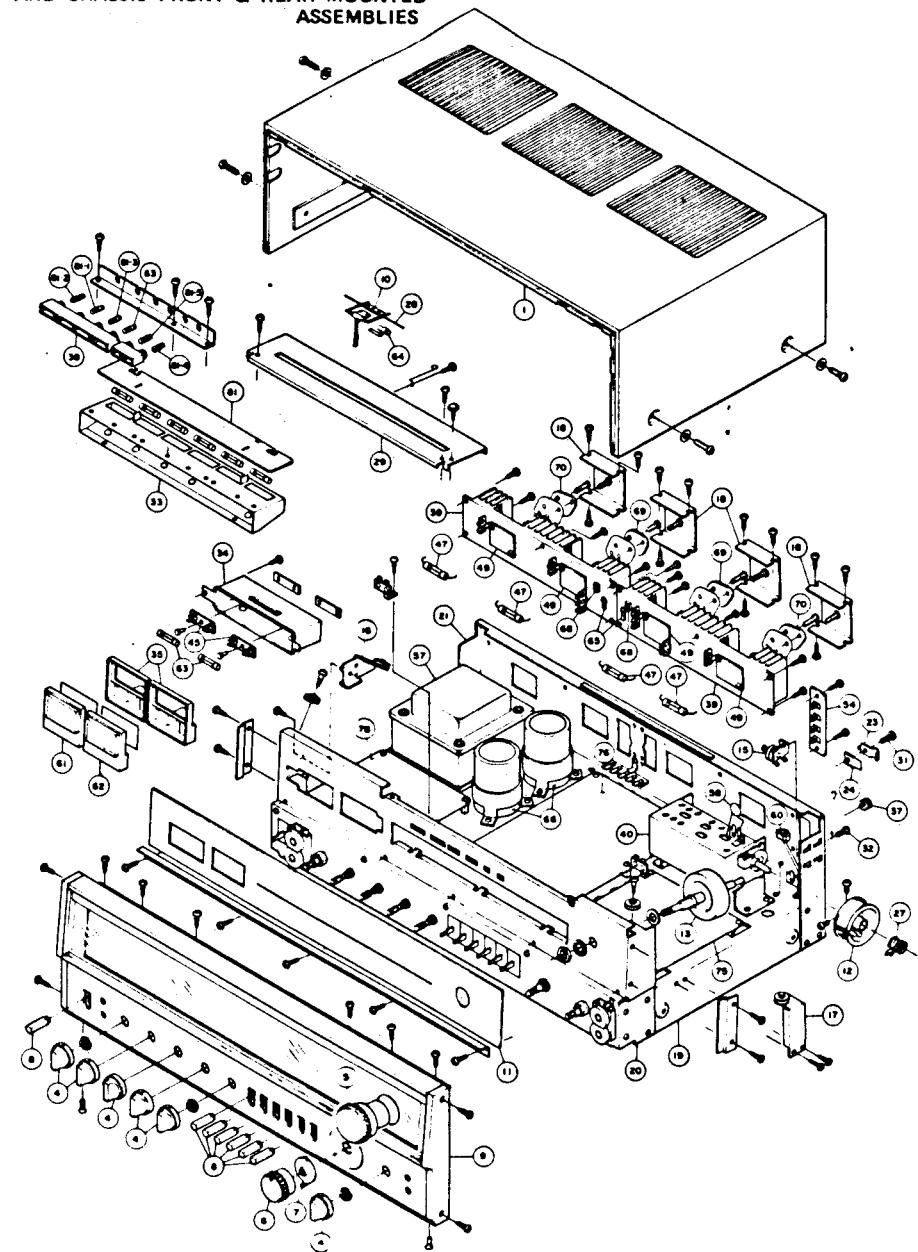
Removal of Tone Control Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 6 screws from 6 Lever switch.
3. Remove 3 nuts from variable resistors.

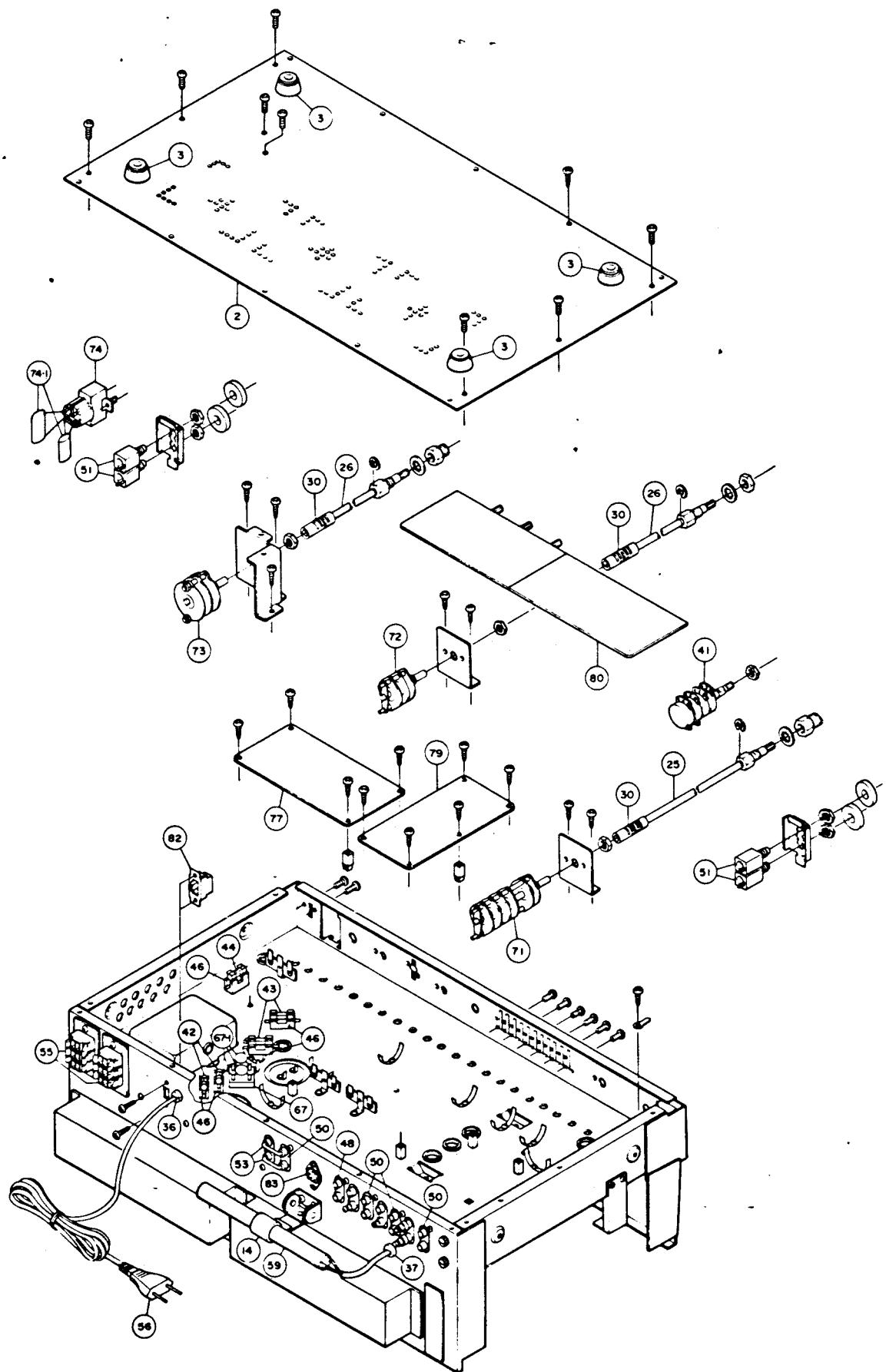
Removal of Power Transistor (Q01~Q04)

1. Remove Cover 4 screws from top and bottom of Plate Heat Sink.
2. Remove 2 screws holding Power Transistor.

EXPLODED VIEW OF CABINET
AND CHASSIS FRONT & REAR MOUNTED
ASSEMBLIES



EXPLDED VIEW OF CHASSIS
BOTTOM MOUNTED ASSEMBLIES



PARTS LIST

CABINET PARTS LIST

Ref. No.	Part Number	Description
1	1310 1101 08700	Cabinet Assy
2 *	1312 1105 17800	Plate Bottom
3 *	1312 1801 13200	Leg

APPEARANCE PARTS LIST

Ref. No.	Part Number	Description
4	1310 1001 35500	Knob, Controls
5	1310 1001 41500	Knob, Tuning
6	1310 1001 36000	Knob, Volume
7	1312 1601 40400	Knob, Balance
8	1310 1001 36100	Knob, Lever Switch
9	1310 3016 24900	Panel Decorate Assy
10	1310 3011 16800	Dial Pointer Assy
11	1312 1201 28500	Plate Dial

CHASSIS PARTS LIST

Ref. No.	Part Number	Description
12	1310 3002 11300	Drum Assy Tuning Gang
13	1310 3003 19100	Tuning Shaft Assy
14	1310 3008 11702	Support, Antenna Assy
15 *	1310 3020 05800	Pulley Assy Panel Rear
16 *	1310 3020 07400	Pulley Assy Panel Front (Left)
17 *	1310 3020 07500	Pulley Assy Chassis (Right)
18	1312 1410 15400	Cover Power Transistor
19 *	1312 3301 21900	Chassis
20 *	1312 3305 20300	Panel Front
21 *	1312 3306 22612	Panel Rear
23	1312 3612 00400	Clamp, 75 ohm Coax.
24	1312 3621 00500	Base, Coax. Clamp
25	1312 4103 11400	Metal Shaft Rotary SW (Long)
26	1312 4103 11500	Metal Shaft Rotary SW (Short)
27	1312 4111 00400	Tension Spring
28	1312 4112 10200	Dial Cord
29	1312 4120 11700	Slide Rail Dial Pointer
30	1312 4121 00100	Coupling (Nylon)
31	1312 4201 12701	Screw, Panel Rear
32	1312 4201 15400	Screw, Panel Rear (Ground)
33	1312 6110 23701	Housing, Dial Lamp P.C.B.
34	1312 6110 26100	Housing, Meter Lamp
35	1312 6110 26200	Housing, Meter
36	1312 6111 14200	Bushing, Line Cord
37	1312 6111 14200	Bushing, AM Antenna Lead
38	1312 6111 19800	Housing, Stereo Beacon Lamp
39	1312 6201 23200	Heat Sink

ELECTRICAL PARTS LIST

Ref. No.	Part Number	Description
40	4 1259 20390	Front End
(Component parts used in		
		Front End are not serviceable and available.)
41	4 2229 25490	VR A-50k, MN-250k
42	4 2349 21570	Fuse 6.3AT (+, -B)
43	4 2349 20380	Fuse 1.0AT (+, -20V)
44	4 2349 20590	Fuse 4.0AT (6.3V)
45	4 2359 20160	Holder Lamp
46	4 2359 21021	Fuse Holder
47	4 2349 21380	Fuse 5AT (+, -B Power)
48	4 2359 22130	RCA Pin Jack 2P
49	4 2359 22440	Socket Transistor
50	4 2359 22710	Socket 4P
51	4 2359 22730	Socket 1P

ELECTRICAL PARTS LIST

Ref. No.	Part Number	Description
52	4 2369 20561	Plug 1P
53	4 2369 21220	Short Plug
54	4 2379 21460	Terminal, Antenna Connector
55	4 2379 21570	Terminal, Speakers Connector
56 *	4 2439 20521	Power Cord
57 (T-1)	4 2519 24101	Power Trans
58	4 2539 20430	Peaking Coil 10 μ H (L01)
59	4 2579 25040	AM Antenna
60	4 2599 20300	Balun
61	4 5119 20670	Meter Signal Strength
62	4 5119 20680	Meter, Center of Channel
63	4 6129 20280	Pilot Lamp 6.3V 250mA
64	4 6129 20592	Small Lamp Indicator 5V 60mA
65	HII-PTH487A-BE	Posistor Protector
R15	R2HCPK222A	Resistor Solid 2.2k ohm 1/2W $\pm 10\%$
66	4 2239 21160	Capacitor Electrolytic 15000 μ F 63V
(C02,03)	C1CRE-227A	Cap. Electrolytic 220 μ F 16V
C09	C1EUEM475A	Cap. Aliscon 4.7 μ F 25V $\pm 20\%$
C10	C1HYDZ 473A	Cap. Ceramic 0.047 μ F 50V +80,-20%
C11	C1HFRM104A	Cap. Mylar 0.1 μ F 50V $\pm 20\%$
67	DDD-S5VB20	Diode S5VB20 (Power Supply)
67-1	C2HYDP103A	Cap. Ceramic 0.01 μ F 500V +100, -0 %
(C04,05 06,07)	68 DAA-STV-3H-W	Diode STV-3H (Idling Bias)
69	TNN-2SD287A-Q	TR 2SD287A-Q
(Q01,02)	70 TNN-2SB539A-Q	TR 2SB539A-Q
(Q03,04)	R03,04 R3DXPK561A	Resistor Oxide Metal Film 560 ohm 2W $\pm 10\%$
R05,06	R2HXPK151A	Resistor Oxide Metal Film 150 ohm 1/2W $\pm 10\%$
R07,08	R2EDPJ274A	Resistor Solid 270K 1/4W $\pm 5\%$
R09,10	R3DXPK56A	Resistor Oxide Metal Film 560ohm 2W $\pm 10\%$
R11,12	R2HXPK151A	Resistor Oxide Metal Film 150 ohm 1/2W $\pm 10\%$
R13,14	R3DXPK100A	Resistor Oxide Metal Film 10 ohm 2W $\pm 10\%$
71 (S-01)	4 2319 34150	Switch Rotary Function
72 (S-02)	4 2319 34130	Switch Rotary Tape Monitor
73 (S-09)	4 2319 34140	Switch Rotary Speaker
74 (S-10)	4 2312 00150	Switch Lever Power
74-1	C2EHRM103A	Capacitor Polypropylene 0.01 μ F 250V $\pm 20\%$
(C01)	75 *	1310 4001 72700 AM, FM RF/IF MPXPC Assy
76 *	1310 4001 72803	Power AMP PC Assy
77 *	1310 4001 72900	Protector PC Assy
78 *	1310 4001 73002	Power Supply PC Assy
79 *	1310 4001 73101	EQ PC Assy
80 *	1310 4001 74900	Pre Tone PC Assy
81 *	1310 4001 72163	Dial Lamp PC Assy
82	4 2319 21531	Slide Switch, Volt Select
83	4 2359 20190	Din Socket

NOTE: * Asterisk indicates not a service part.

RECOMMENDED TEST EQUIPMENT

The following test equipment is recommended to completely test and align the Receiver.

- Line Voltage Isolation Transformer.
- AC DC Multimeter.
- Accurately Calibrated AC Voltmeter.
- Oscilloscope (Flat to 100 KHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors, 8-ohms, 250 Watts (Minimum Rating)
- Low-Distortion AM-FM Signal Generator
- 10.7 MHz Sweep Generator
- Multiplex Generator
- 455 KHz Sweep Generator

HARMONIC DISTORTION TEST

CAUTION: Limit the following tests to no more than ten minutes each. Use 8-ohm resistors with a minimum power rating of 250 watts when connecting a load across the SPEAKERS terminals.

CONTROL SETTINGS:

Unplug the AC power cord and set the front panel controls as follows.
 BASS, MID, TREBLE, and BALANCE controls to center positions
 POWER switch to OFF
 SPEAKERS switch to PHONES
 FUNCTION switch to AUX
 HIGH & LOW FILTER, MONO MODE, LOUDNESS CONTOUR and TAPE MONITOR switch to OFF and SOURCE VOLUME control to MINIMUM position
 LEFT CHANNEL DRIVEN

ONE CHANNEL DRIVEN:

- 1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 KHz and output to minimum.
- 2) Connect an 8-ohm load resistor between SPEAKERS MAIN LEFT and COM terminals.
- 3) Connect a Harmonic Distortion analyzer and an AC VTVM in parallel across the 8-ohm load.
- 4) Increase generator output for RS-1058 90W RMS (26.8V across the 8-ohm load)
 Harmonic Distortion Analyzer should measure 0.15% distortion or less.
- 5) Repeat steps 1 through 4 for RIGHT CHANNEL.

BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT MAIN SPEAKERS terminals. Push down "MONO" switch. Adjust generator output and "BALANCE" control for 90W at Left and Right Channels 26.8V across the 8-ohm loads.
 Harmonic Distortion Analyzer should measure 0.1% distortion or less at each channel.

ADJUSTMENT OF THE POWER AMP. P.C. BOARD

BEFORE ADJUSTMENT

- Disconnect the PRE OUT/MAIN IN connector.
- 2 After the power switch is turned ON, allow a few minutes marking adjustment, to be sure of the most stable operation.
 - 3 Connect dummy load resistors (8 ohm) to the speaker terminals.
 - 4 Use DC V.T.V.M. or Circuit Tester (input impedance: More than 50k ohm/V)

(A) IDLING CURRENT ADJUSTMENT

Adjust VR01 (VR02) for an idling current of 30mA. Measure the voltage at both sides of R65 (R66) resistor (0.47 ohm) and Adjust VR01 (VR02) to indicate 14mV + 2mV.

Note: Polarity of Emitter of Q01 (Q02) is (+) Mid-Point is (-).

(B) a. Turn the semi-fixed variable resistor slowly during adjustment.

b. Be careful of the polarity of each measurement point.

Nominal Specifications For Information Only.

RECEIVER	RS-1058
POWER AMPLIFIER SECTION Continuous RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with an 8 ohm load.	90Wx2
Power Bandwidth	20Hz/20kHz
Total Harmonic Distortion	0.1 %
PREAMPLIFIER SECTION Input Sensitivity and Impedance At rated output, 8-ohms at 1kHz	
Phone (1 and 2)	2mV / 50k ohm
Phone (max input capability)	180mV
Auxiliary	150mV/100k ohm
Tape Monitor (1 and 2)	150mV/100k ohm
Hum & Noise (below rated output)	
Phone (1 and 2)	76 dB
Auxiliary	90 dB
Tape Monitor (1 and 2)	90 dB
Frequency Response	
Phone (RIAA EQUALIZED ± 2 dB)	30Hz - 15kHz
Auxiliary input ± 2 dB	20Hz - 20kHz
Tape Monitor input ± 2 dB	20Hz - 20kHz
Bass Control Range (at 100Hz)	± 10 dB
Treble Control Range (at 10kHz)	± 10 dB
Mid Range (at 5kHz)	± 10 dB
Loudness Contour (at 30 dB volume attenuation)	+6 dB at 100Hz +4 dB at 10kHz
High Filter	-6 dB (5kHz)
Low Filter	-6 dB (60Hz)
Separation (Stereo) @ 1kHz	40 dB
POWER SECTION INPUT	150mV/100k ohm
FM TUNER SECTION	
Mono	1.7 μ V/9.8 dBf
Stereo	4.3 μ V/17.9 dBf
50 dB Quieting Sensitivity	Mono 2.5 μ V/13.2 dBf Stereo 34 μ V/35.9 dBf
Capture Ratio	0.8 dB
All Channel Selectivity	75 dB
Image Response Rejection	80 dB
Spurious Response Rejection	100 dB
AM Rejection	65 dB
Signal-to-Noise Ratio (Mono & Stereo)	75/70 dB
Total Harm. Distortion (Mono & Stereo)	0.15/ 0.25 %
50 dB Quieting Sensitivity THD	Mono 0.3 % Stereo 0.4 %
Stereo Separation (1 kHz/10 kHz)	45/36 dB
Sub-Carrier Suppression (19/38 kHz)	60/70 dB
AM TUNER SECTION	
Sensitivity	300 μ V/m
Selectivity	43 dB
Signal-to-Noise Ratio	56 dB
Image Frequency Rejection	56 dB
IF Rejection	70 dB
GENERAL SECTION	
Power Requirements (50/60 Hz)	110V/220V
Power Consumption	500W/612VA
AC Outlets	
Dimensions H x W x D (Inches)	6-13/16" x 20-3/4" x 14-1/4"
Weight (Lbs.)	32.4

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AM-FM MULTIPLEX ALIGNMENT

AM ALIGNMENT

Step	Adjusting circuit	Connection		SG. frequency	Position of tuning dial	Adjustment	V.T.V.M. Oscilloscope
		Input	Output				
1	IF	Connect sweep generator to VC4.	Connect oscilloscope to test point Pin No. 8	455 KHz	Near max. capacity of VC at position with no signal.	AM 1st 9-21310 AM DET 9-21291	
2	RF	Connect standard loop antenna to output terminal of SG. Place receiver 2 feet from loop antenna	Connect V.T.V.M. to Pin No. 8	600 KHz (400Hz, 30 % modulation)	600 KHz	AM ANT 9-25040 AM OSC 9-20880	Max.
				1400 KHz (400Hz, 30 % modulation)	1400 KHz	TC 5 TC 6	Max.
4	Repeat adjustments.						

1. Variable capacitor completely closed.
2. Set the dial pointer to very left line dial scale.
3. Connect sweep generator, SG, V.T.V.M. and oscilloscope.
4. Function switch to "AM."
5. Use a screwdriver with plastic grip for all adjustments.

V ALIGNMENT

Step	Adjusting circuit	Connection		SG.frequency	Position of tuning dial	Adjustment	V.T.V.M. Oscilloscope
		Input	Output				
1	IF	Connect sweep generator to test point IC 02 Pin No. 13	Connect oscilloscope to test point TP 7	10.7 MHz (none modulation)	Near max. capacity of VC at position with no signal.	IFT IN FRONT END	
2	Ratio Det.		Connect oscilloscope to test point TP 1			FM QUADRATURE COIL 9-21320	
3	RF	Connect FM SG. to FM ANT terminals.	Connect V.T.V.M. to speaker terminal.	90 MHz (400 Hz, 30 % modulation)	90 MHz	LA LR	Max.
4				106 MHz (400 Hz, 30 % modulation)	106 MHz	TCA TCR	Max.
5	Repeat adjustments.						

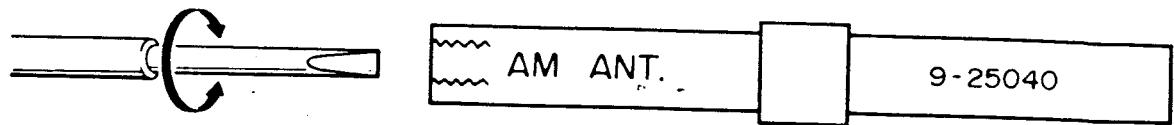
1. Variable capacitor completely closed.
2. Set the dial pointer to very left line dial scale.
3. Connect sweep generator, FM SG, V.T.V.M. and oscilloscope. FM ANT input impedance is 300 ohm.
4. Function switch to "FM."
5. Use a screwdriver with plastic grip for all adjustments.

FM MPX ALIGNMENT

Step	Adjusting circuit	Connection		Position of tuning dial	Adjustment	
		Input	Output			
1	PLL IC FO (19 KHz) Adjustment	None	Connect Frequency counter or synchroscope to TP 2		Adjust VR 03(4.7K-B) so that 19 KHz may be indicated on the frequency counter or synchroscope.	
2	FM STEREO Signal Separation	Connect FM stereo SG to FM ANT terminals. 19 KHz signal ON. Main channel, sub channel signal ON. Add 1000 Hz signal from L Ch.	Connect V.T.V.M. to output terminal (R channel).	Near max. capacity of VC at position with no signal.	VR 02 (1K-B)	V.T.V.M. Min.
		Connect FM stereo SG to FM ANT terminals. 19 KHz signal ON. Main channel, sub channel signal ON. Add 1000 Hz signal from R Ch.	Connect V.T.V.M. to output terminal (L channel)			
3	Repeat steps 1, 2, Set at position with max. channel separation.					

1. Variable capacitor completely closed.
2. Connect FM stereo SG and V.T.V.M.
3. Function switch to "FM"
4. Use a screwdriver with plastic grip for all adjustments.

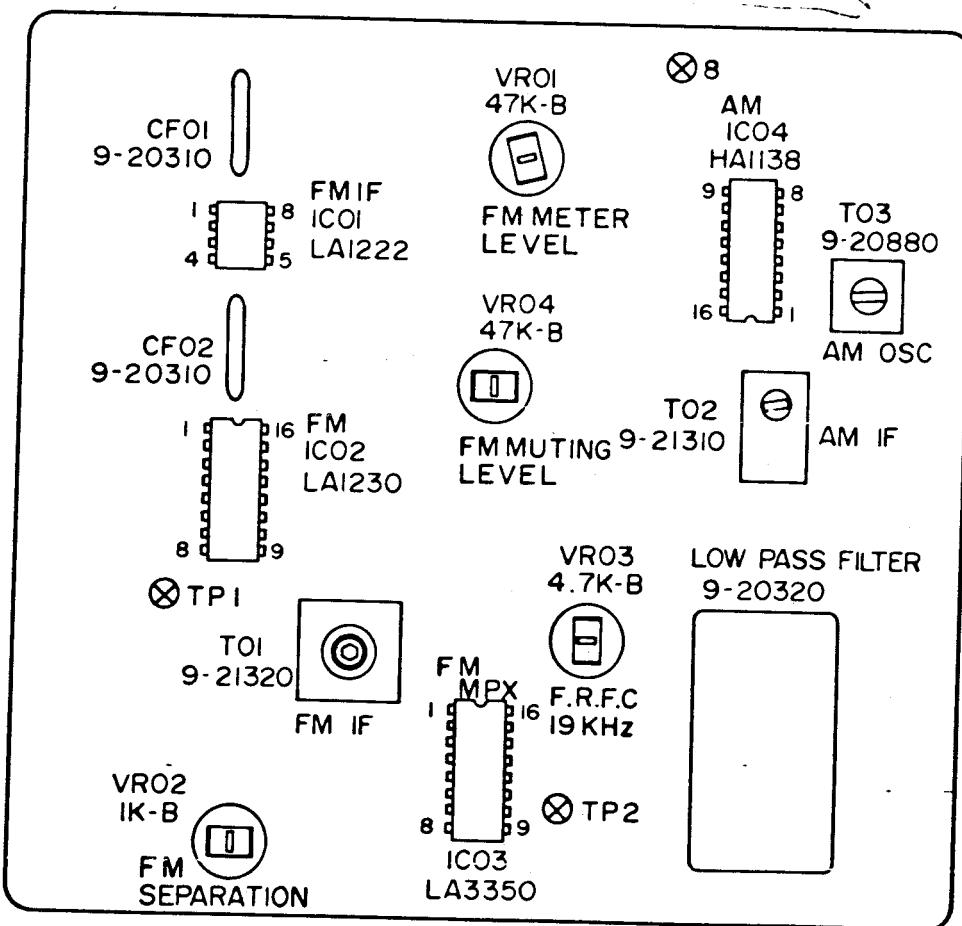
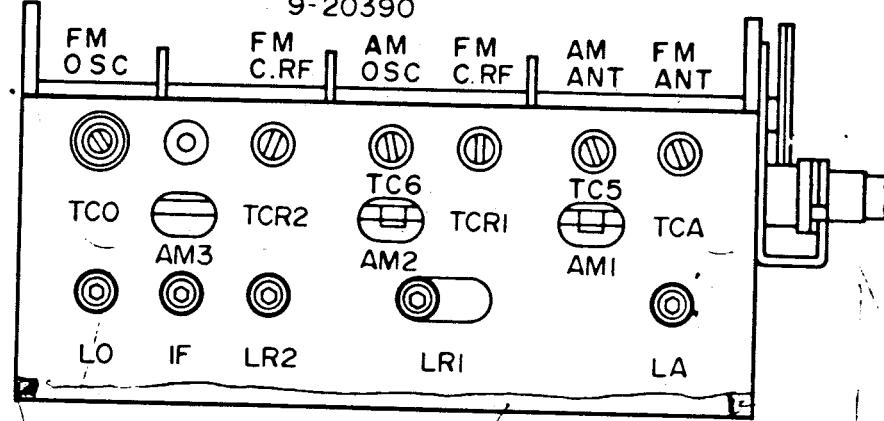
AM-FM RF/IF MPX BOARD LAYOUT



9-25040

FRONT END

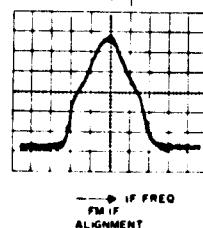
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ALIGNMENT WAVE FORMS

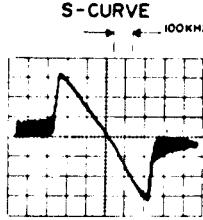
WITH OSCILLOSCOPE TIME BASE SETTINGS

FM IF CURVE



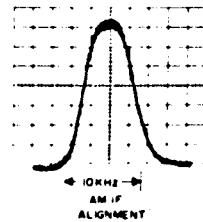
Vertical Sensitivity: 0.5V/cm.
Horizontal Sweep: 100 μsec./cm.

S-CURVE



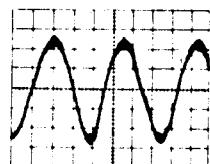
Vertical Sensitivity: 0.5V/cm.
Horizontal Sweep: 100 μsec./cm.

AM IF CURVE



Vertical Sensitivity: 0.5V/cm.
Horizontal Sweep: 100 μsec./cm.

SINE WAVE

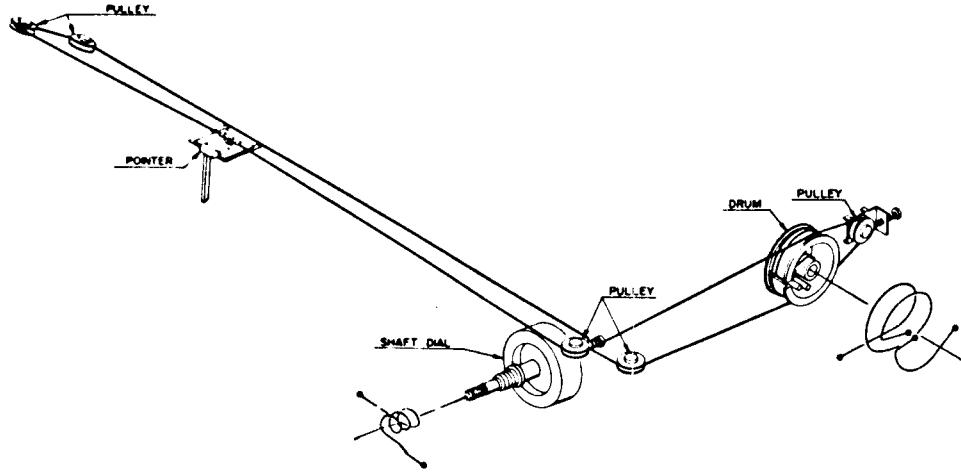


Vertical Sensitivity: 0.5V/cm.
Horizontal Sweep: 500 μsec./cm.

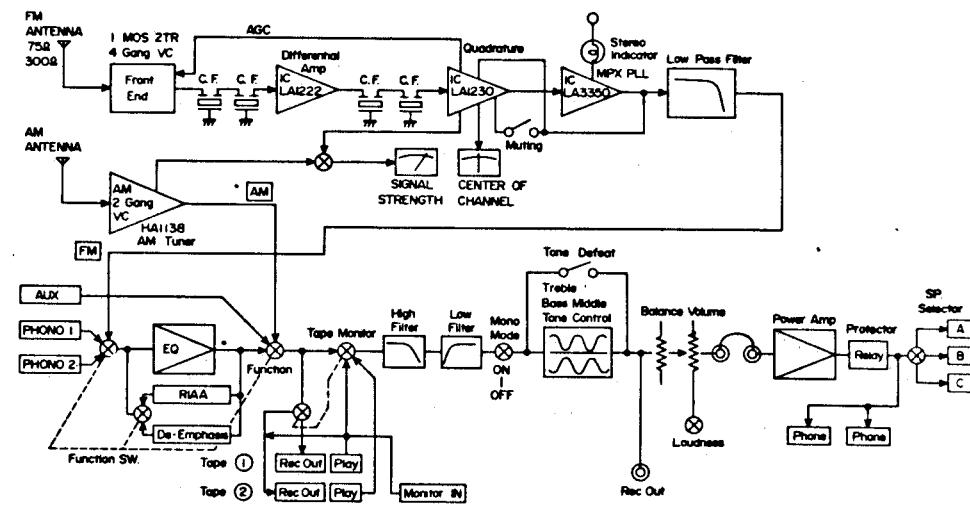
FM DETECTOR ALIGNMENT

SYMMETRICAL
TUNING

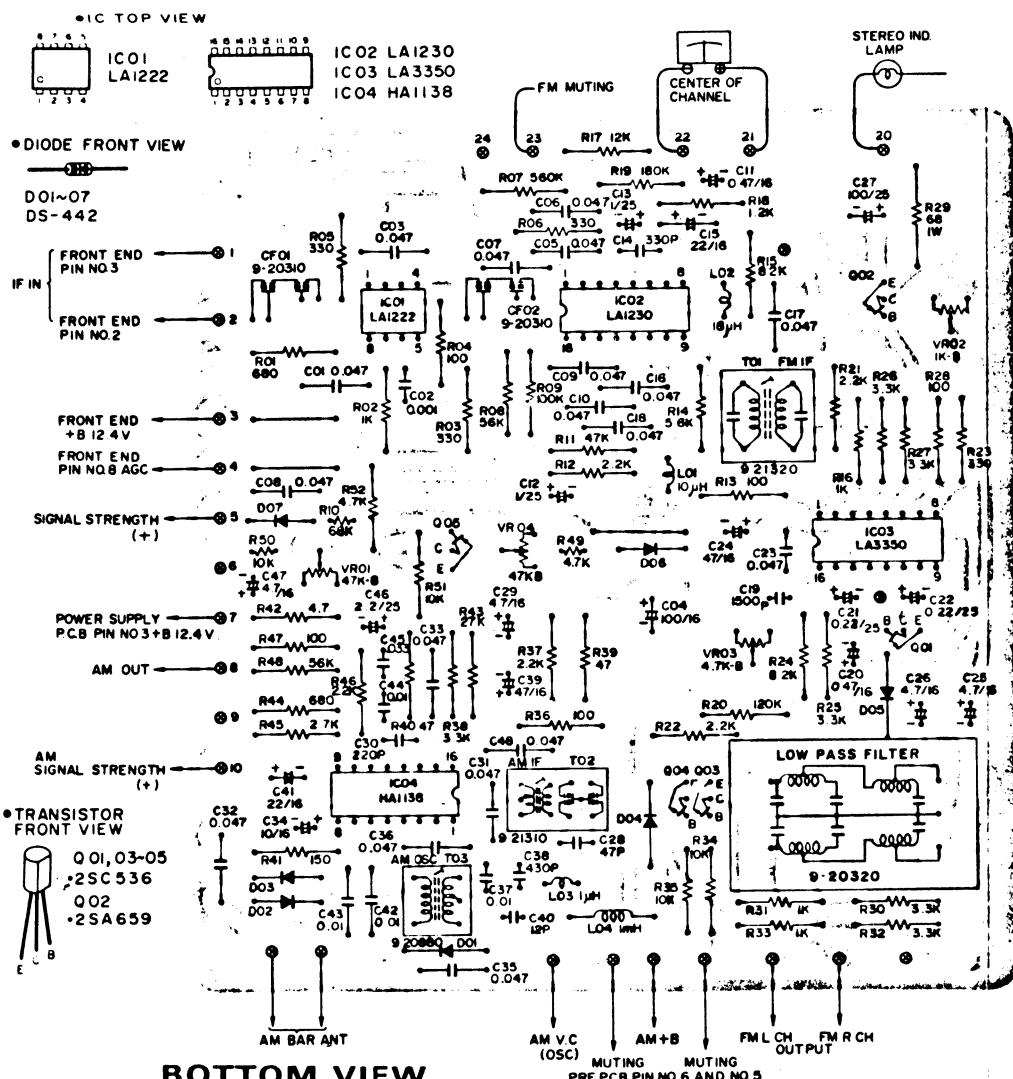
DIAL CORD STRINGING



BLOCK DIAGRAM



AM FM RF/IF MPX P.C. BOARD

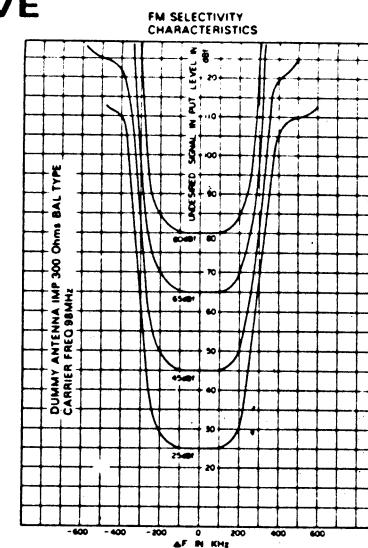
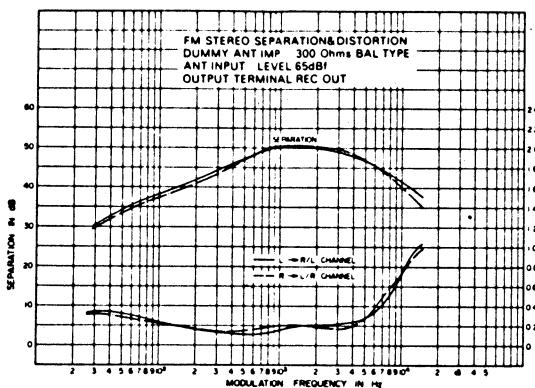
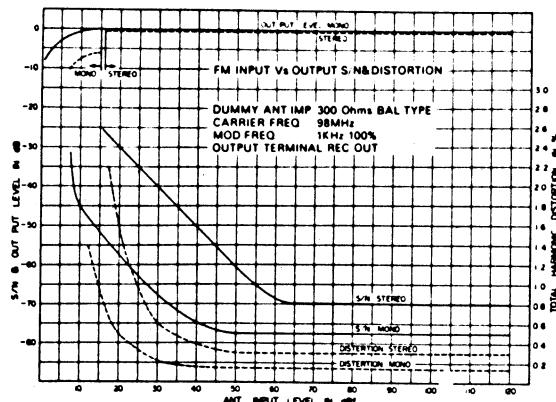


PARTS LIST

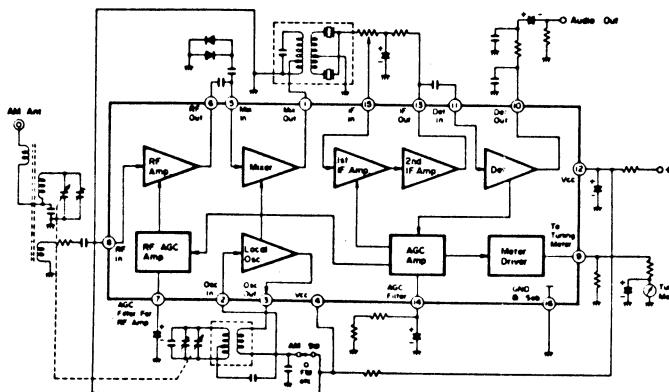
AM FM RF/IF MPX PCB Assy 1310 4001 72700

Ref. No.	Part Number	Description	Ref. No.	Part Number	Description
SEMICONDUCTORS					
D01,02	2055 9040 44210	Diode DS-442	03,04	2065 0131 22210	IC LA1222
L01	4 2539 20370	Coil 10 "H	05,06	2065 0151 23010	IC LA 1230
L02	4 2539 20380	Coil 18 "H	07	2065 0743 35019	IC LA-3350SS
L03	4 2539 20310	Coil 1 "H	05 %	IKK-HA1138	IC HA1138
L04	4 2539 20170	Choke Coil 1 mH		2035 5100 53640	TR 2SC536 D or E
T01	4 2569 21320	IF Trans FM		2035 6800 65940	TR 2SA659 D or E
T02	4 2589 20880	OSC Coil AM		2035 5100 53640	TR 2SC536 D or E
VR01	4 2229 25100	Semi-Fixed VR 47k-B	Q01	2035 5100 53640	TR 2SC536 D or E
VR02	4 2229 22910	VR 1k-B	Q02	2035 6800 65940	TR 2SA659 D or E
VR03	4 2229 23880	VR 4.7k-B	Q03,04	2035 5100 53640	TR 2SC536 D or E
VR04	4 2229 25100	Semi-Fixed VR 47k-B	05		
	4 2279 20320	Low Pass Filter			
	4 2359 23120	Socket 16P			
CF01,02	4 2279 20310	Ceramic Filter			
RESISTORS					
R01	R2EDSJ681A	Carbon 680	1/4W	± 5 %	
R02	R2EDSJ102A	Carbon 1k	1/4W	± 5 %	
R03	R2EDSJ331A	Carbon 330	1/4W	± 5 %	
R04	R2EDSJ101A	Carbon 100	1/4W	± 5 %	
R05,06	R2EDSJ331A	Carbon 330	1/4W	± 5 %	
R07	R2EDSJ564A	Carbon 560k	1/4W	± 5 %	
R08	R2EDSJ563A	Carbon 56k	1/4W	± 5 %	
R09	R2EDSJ104A	Carbon 100k	1/4W	± 5 %	
R10	R2EDUJ683A	Carbon 68k	1/4W	± 5 %	
R11	R2EDSJ473A	Carbon 47k	1/4W	± 5 %	
R12	R2EDSJ222A	Carbon 2.2k	1/4W	± 5 %	
R13	R2EDSJ101A	Carbon 100	1/4W	± 5 %	
R14	R2EDSJ562A	Carbon 5.6k	1/4W	± 5 %	
R15	R2EDSJ822A	Carbon 8.2k	1/4W	± 5 %	
R16	R2EDSJ102A	Carbon 1k	1/4W	± 5 %	
R17	R2EDSJ123A	Carbon 12k	1/4W	± 5 %	
R18	R2EDSJ122A	Carbon 1.2k	1/4W	± 5 %	
R19	R2EDSJ184A	Carbon 180k	1/4W	± 5 %	
R20	R2EDSJ124A	Carbon 120k	1/4W	± 5 %	
R21,22	R2EDSJ222A	Carbon 2.2k	1/4W	± 5 %	
R23	R2EDSJ331A	Carbon 330	1/4W	± 5 %	
R24	R2EDSJ822A	Carbon 8.2k	1/4W	± 5 %	
R25,26	R2EDSJ332A	Carbon 3.3k	1/4W	± 5 %	
R27	R2EDSJ101A	Carbon 100	1/4W	± 5 %	
R28	R3AXBJ680A	Oxide Metal Film 68 1W	± 5 %		
R29	R2EDSJ332A	Carbon 3.3k	1/4W	± 5 %	
R30	R2EDSJ102A	Carbon 1k	1/4W	± 5 %	
R31	R2EDSJ332A	Carbon 3.3k	1/4W	± 5 %	
R32	R2EDSJ102A	Carbon 1k	1/4W	± 5 %	
R33	R2EDSJ103A	Carbon 10k	1/4W	± 5 %	
R34,35	R2EDSJ103A	Mylar 0.033 "F 50V	± 20 %		
R36	R2EDSJ101A	Carbon 100	1/4W	± 5 %	
R37	R2EDSJ222A	Carbon 2.2k	1/4W	± 5 %	
R38	R2EDSJ332A	Carbon 3.3k	1/4W	± 5 %	
R39,40	R2EDSJ470A	Carbon 47	1/4W	± 5 %	
R41	R2EDSJ151A	Carbon 150	1/4W	± 5 %	
R42	R2EDSJ477A	Carbon 4.7	1/4W	± 5 %	
R43	R2EDSJ273A	Carbon 27k	1/4W	± 5 %	
R44	R2EDSJ681A	Carbon 680	1/4W	± 5 %	
R45	R2EDSJ272A	Carbon 2.7k	1/4W	± 5 %	
R46	R2EDSJ222A	Carbon 2.2k	1/4W	± 5 %	
R47	R2EDSJ101A	Carbon 100	1/4W	± 5 %	
R48	R2EDSJ563A	Carbon 56k	1/4W	± 5 %	
R49	R2EDUJ472A	Carbon 4.7k	1/4W	± 5 %	
R50	R2EDUJ103A	Carbon 10k	1/4W	± 5 %	
R51	R2EDSJ103A	Carbon 10k	1/4W	± 5 %	
R52	R2EDSJ472A	Carbon 4.7k	1/4W	± 5 %	

FM TUNER SECTION CHARACTERISTIC CURVE



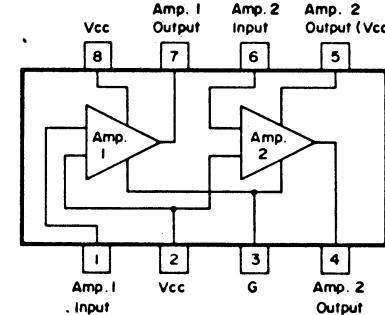
AM RF IF IC HA1138 SIGNAL FLOW



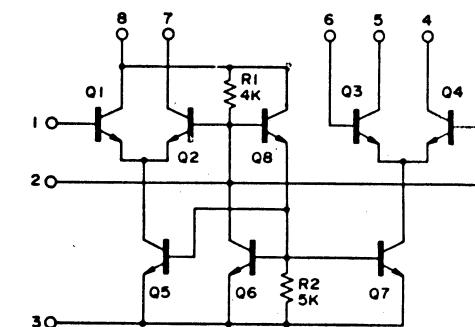
Signal enters R.F. AMP of I.C. where it is amplified. The converter section consists of a mixer and a local oscillator. The output of the mixer stage contains two frequency components.

The 455 KHz component signal is then fed to the I.F. amplifier. The tuned Frequency of the I.F. filter is 455 KHz. When the I.F. signal appears at the low pass filter, the 455-KHz carrier component is then locked, allowing only its audio component to pass.

FM IF IC LA1222 SIGNAL FLOW AND EQUIVALENT DIAGRAM

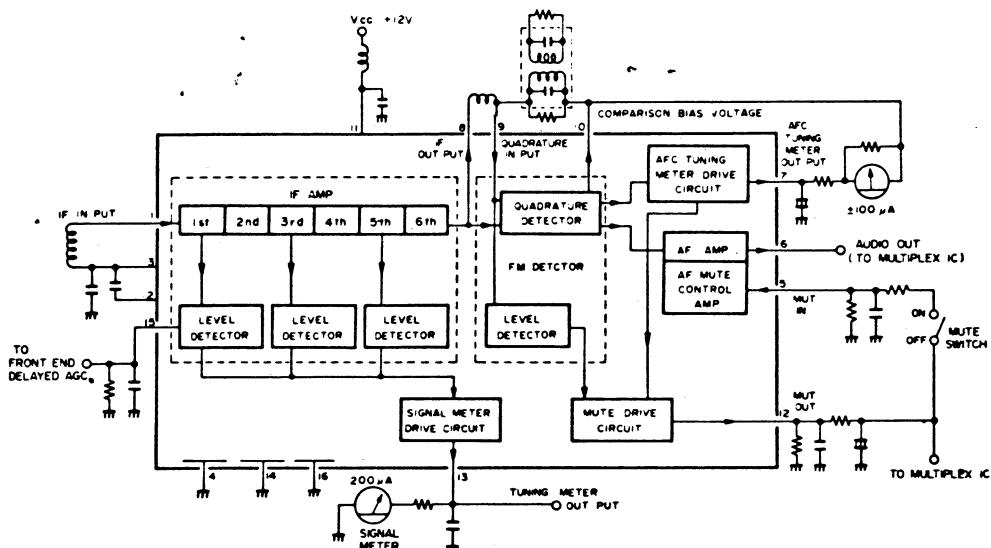


The circuit contains two steps of an independent differential amplification circuit, although the LA1222 is rated to operate on 12-volt power, it can also be used at low voltage, it also permits desired current limitation through insertion of a resistor between pins (2) and (8).

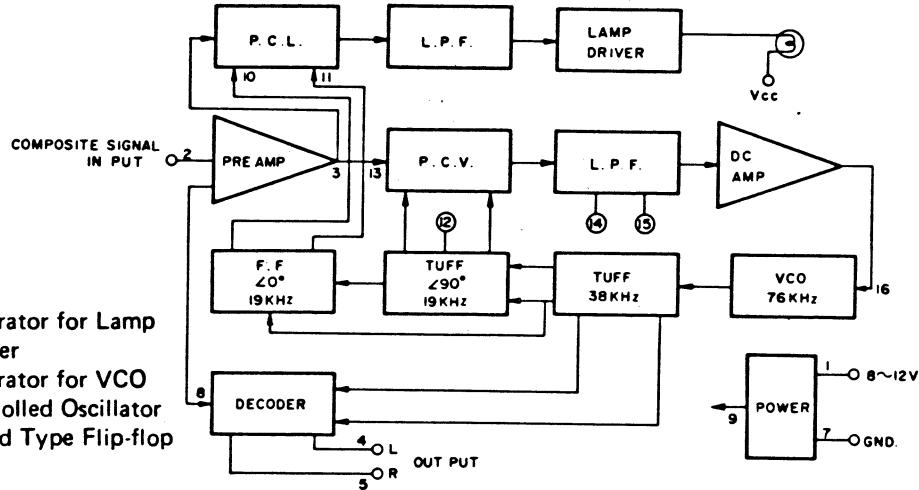


The limiting action by this circuit has current-limiting type limiter characteristics. The advantages that the current limiting type limiter are: It improves capture ratio against input variation, it does not deviate center frequency, etc.

FM IF IC LA1230 SIGNAL FLOW



FM MPX IC LA3350 SIGNAL FLOW



P. C. L. : Phase Comparator for Lamp
 L. P. F. : Low Pass Filter
 P. C. V. : Phase Comparator for VCO
 V C O : Voltage controlled Oscillator
 TUFF : Direct coupled Type Flip-flop

The function of LA3350 is divided into two sections; the PLL section that reproduces the 38 KHz subcarrier, and the decoder section that switches the composite signal. The phase-duty cycle stability of the switching signal reproduced by the PLL determines the separation and the distortion factor of the demodulated signal. The phase comparator detects the phase difference between the VCO oscillator signal and the pilot signal. The detected output is in turn used as the control signal for the VCO.

Since higher harmonics are contained in this phase difference signal, it is necessary that a loop filter be used to eliminate these harmonics. The resulting DC component is applied to the VCO as the control signal. The characteristics of the loop filter practically determines the characteristics of the PLL. Stability of the signal synchronized to the input cannot be obtained unless the VCO itself is stable.

Here, only the demodulator circuit is essential as the FM stereo multiplex demodulator. The other components are the PLL as the 19 KHz selective circuit, and the stereo broadcast indicator circuit. The functions of these components are briefly described below.

The voltage controlled oscillator generates a saw-tooth wave of 76 KHz, and is frequency-controlled by the output from the DC amplifier. The frequency of the DC amplifier output is reduced to half, or 38 KHz, by means of a direct-coupled flip-flop circuit FF-1. This 38 KHz signal is applied to the demodulator circuit and demodulates the stereo composite signal. The FF-1 output is again reduced to 19 KHz by another direct-coupled flip-flop circuit FF-2.

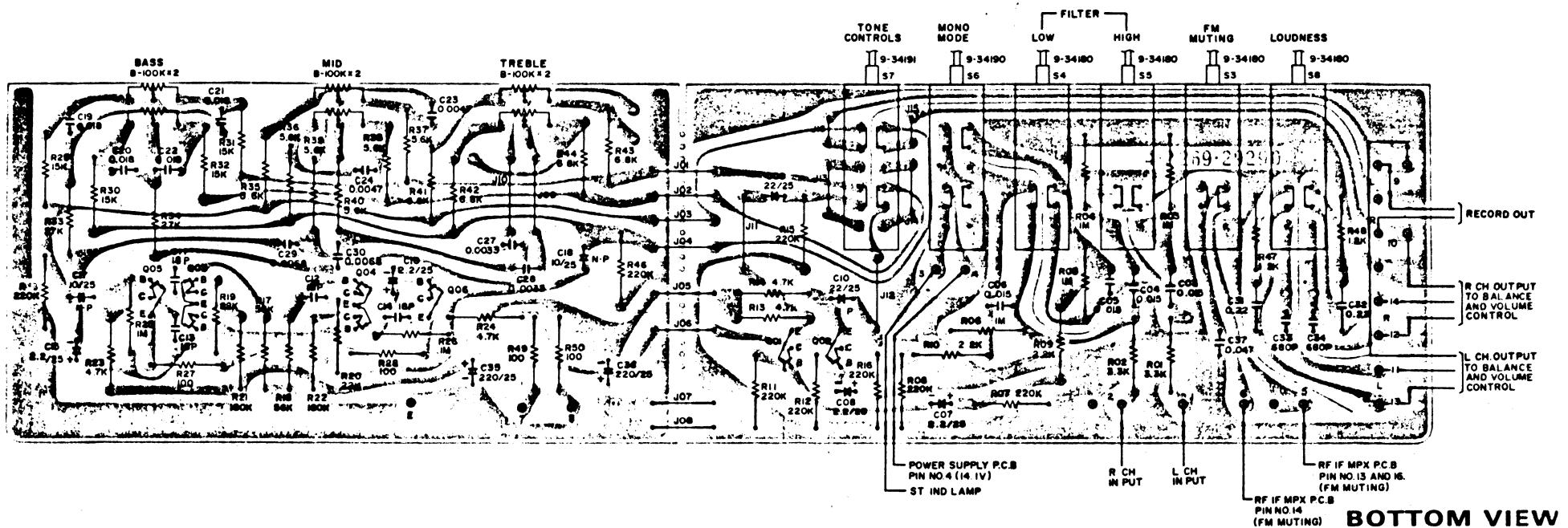
This FF-2 output is then applied to a phase comparator, PC-1, and its phase is compared with that of the pilot signal contained in the input signal. The output from the FF-3 is 19 KHz and 90 degrees lagging in phase behind that of the FF-2 output. It is then applied to another phase comparator, PC-2, where the 19 KHz component of the input signal is detected and fed to the stereo broadcast indicator circuit to activate the pilot lamp.

PARTS LIST

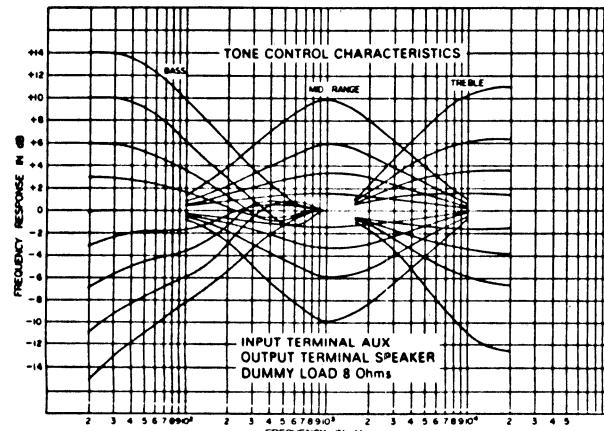
PRE TONE PCB Assy
1310 4001 73200

Ref. No.	Part Number	Description	Ref. No.	Part Number	Description
SEMICONDUCTORS					
S03	4 2229 25390	VR B-100kx2 (RS-1040)	Q01,02	2035 5151 57079	TR 2SC1570 LG
S04	4 2319 34180	SW Lever FM Muting	05,06		
S05	4 2319 34180	SW Lever Low Filter	Q03,04	TMM-2SA798-F	TR 2SA798 F
S06	4 2319 34180	SW Lever High Filter			
S07	4 2319 34190	SW Lever Mono Mode			
S08	4 2319 34191	SW Lever Tone Controls			
RESISTORS					
C03,04	C1HFAK153A	Mylar 0.015 μ F 50V $\pm 10\%$	R01,02	R2EDVJ332A	Carbon 3.3k 1/4W $\pm 5\%$
05,06		05,06	R03,04	R2EDVJ105A	Carbon 1M 1/4W $\pm 5\%$
C07,08	C1EUEM225A	Alsicon 2.2 μ F 25V $\pm 20\%$	R07,08	R2EDVJ224A	Carbon 220k 1/4W $\pm 5\%$
C09,10	C1EAEN226A	Electrolytic 22 μ F 25V $\pm 30\%$	R09,10	R2EDVJ222A	Carbon 2.2k 1/W $\pm 5\%$
C11,12	C1HCDK180SL	Ceramic 18pF 50V $\pm 10\%$	R11,12	R2EDVJ224A	Carbon 220k 1/4W $\pm 5\%$
13,14			R13,14	R2EDVJ472A,	Carbon 4.7k 1/4W $\pm 5\%$
C15,16	C1EUEM225A	Alsicon 2.2 μ F 25V $\pm 20\%$	R15,16	R2EDVJ224A	Carbon 220k 1/4W $\pm 5\%$
C17,18	C1EAEN106A	Electrolytic 10 μ F 25V $\pm 30\%$	R17,18	R2EDVJ563A	Carbon 56k 1/4W $\pm 5\%$
C19,20	C1HRK183A	Mylar 0.018 μ F 50V $\pm 10\%$	R19,20	R2EDVJ223A	Carbon 22k 1/4W $\pm 5\%$
21,22			R21,22	R2EDVJ184A	Carbon 180k 1/4W $\pm 5\%$
C23,24	C1HFRK472A	Mylar 0.0047 μ F 50V $\pm 10\%$	R23,24	R2EDVJ472A	Carbon 4.7k 1/4W $\pm 5\%$
C27,28	C1HFRK332A	Mylar 0.0033 μ F 50V $\pm 10\%$	R25,26	R2EDVJ105A	Carbon 1M 1/4W $\pm 5\%$
C29,30	C1HFRK682A	Mylar 0.0068 μ F 50V $\pm 10\%$	R27,28	R2EDVJ101A	Carbon 100 1/4W $\pm 5\%$
C31,32	C1HFRK224A	Mylar 0.22 μ F 50V $\pm 10\%$	R29,30	R2EDVJ153A	Carbon 15k 1/4W $\pm 5\%$
C33,34	C1HYDK681R	Ceramic 680pF 50V $\pm 10\%$	31,32		
C35,36	C1ERE-227A	Electrolytic 220 μ F 25V	R33,34	R2EDVJ273A	Carbon 27k 1/4W $\pm 5\%$
C37	C1HYDZ473A	Ceramic 0.047 μ F 50V +80, -20 %	R35,36	R2EDVJ562A	Carbon 5.6K 1/4W $\pm 5\%$
			37,38		
			39,40		
			R41,42	R2EDVJ682A	Carbon 6.8K 1/4W $\pm 5\%$
			43,44		
			R45,46	R2EDVJ224A	Carbon 220K 1/4W $\pm 5\%$
			R47,48	R2EDVJ122A	Carbon 1.2K 1/4W $\pm 5\%$
			R49,50	R2EDVJ101A	Carbon 100 1/4W $\pm 5\%$

TONE CONTROL AND MODE SELECTOR P.C.B.

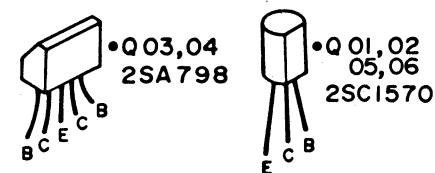


CHARACTERISTIC CURVE

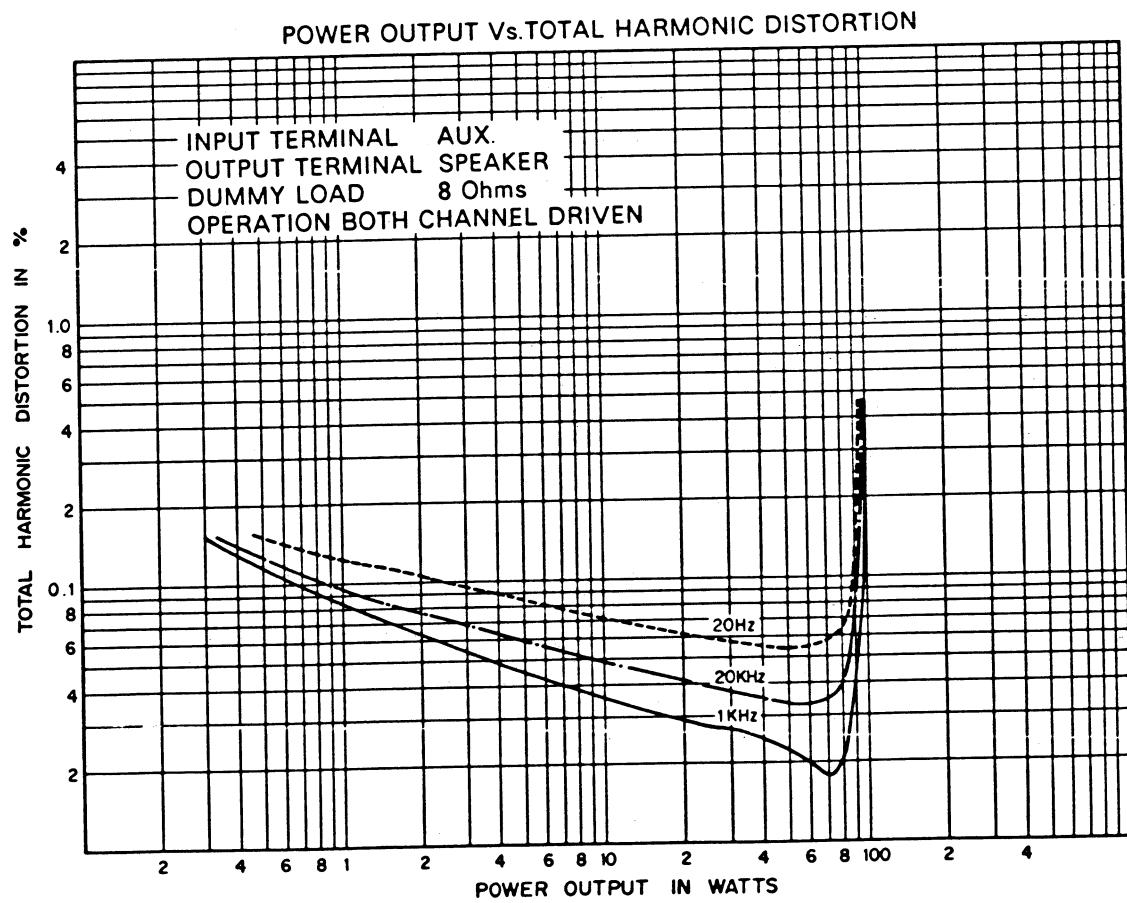
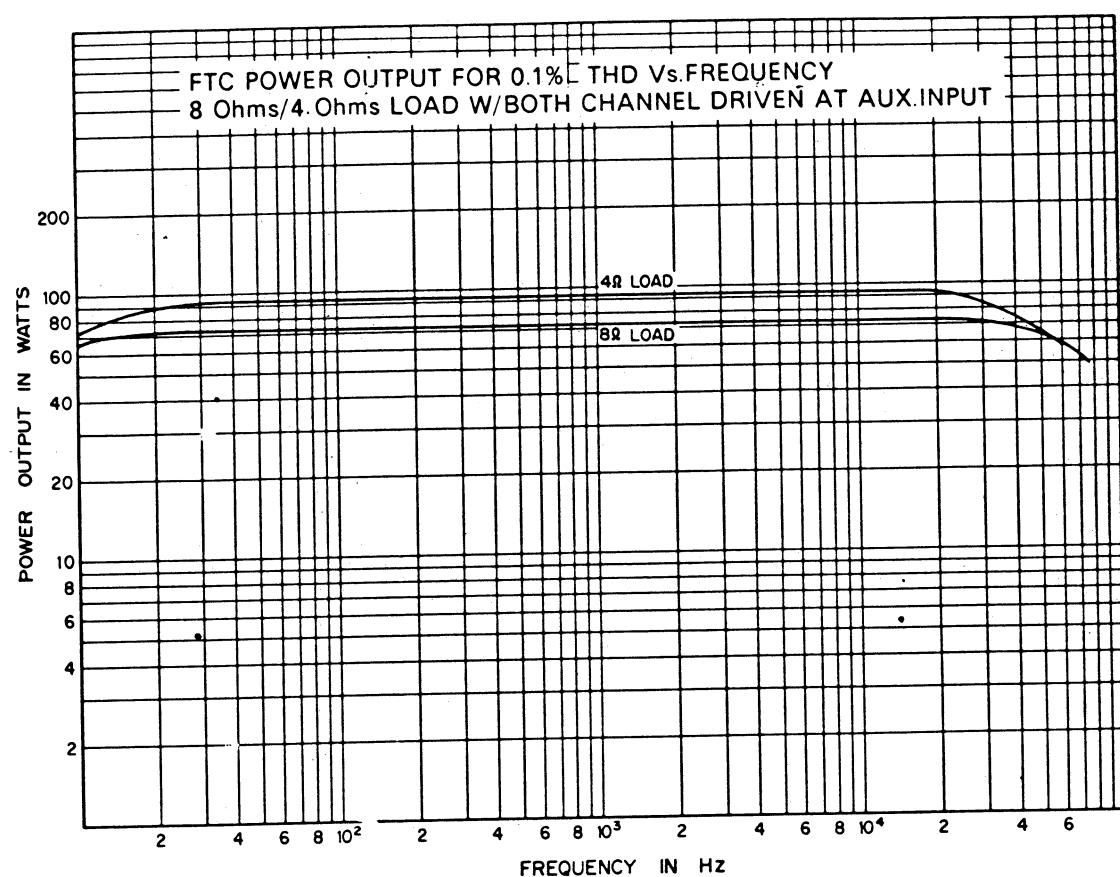


TRANSISTOR DC VOLTAGES					
SYMBOL NO.	DEVICE	B	C	E	I _C
Q01,02	2SC1570	-1.55V	19.8V	-22V	
Q03,04	2SA798	0.09V	-17.8V	0.07V	-18.9V
Q05,06	2SC1570	-17.9V	-0.1V	-18.4V	

TRANSISTOR FRONT VIEW



POWER AMPSECTION CHARACTERISTIC CURVE

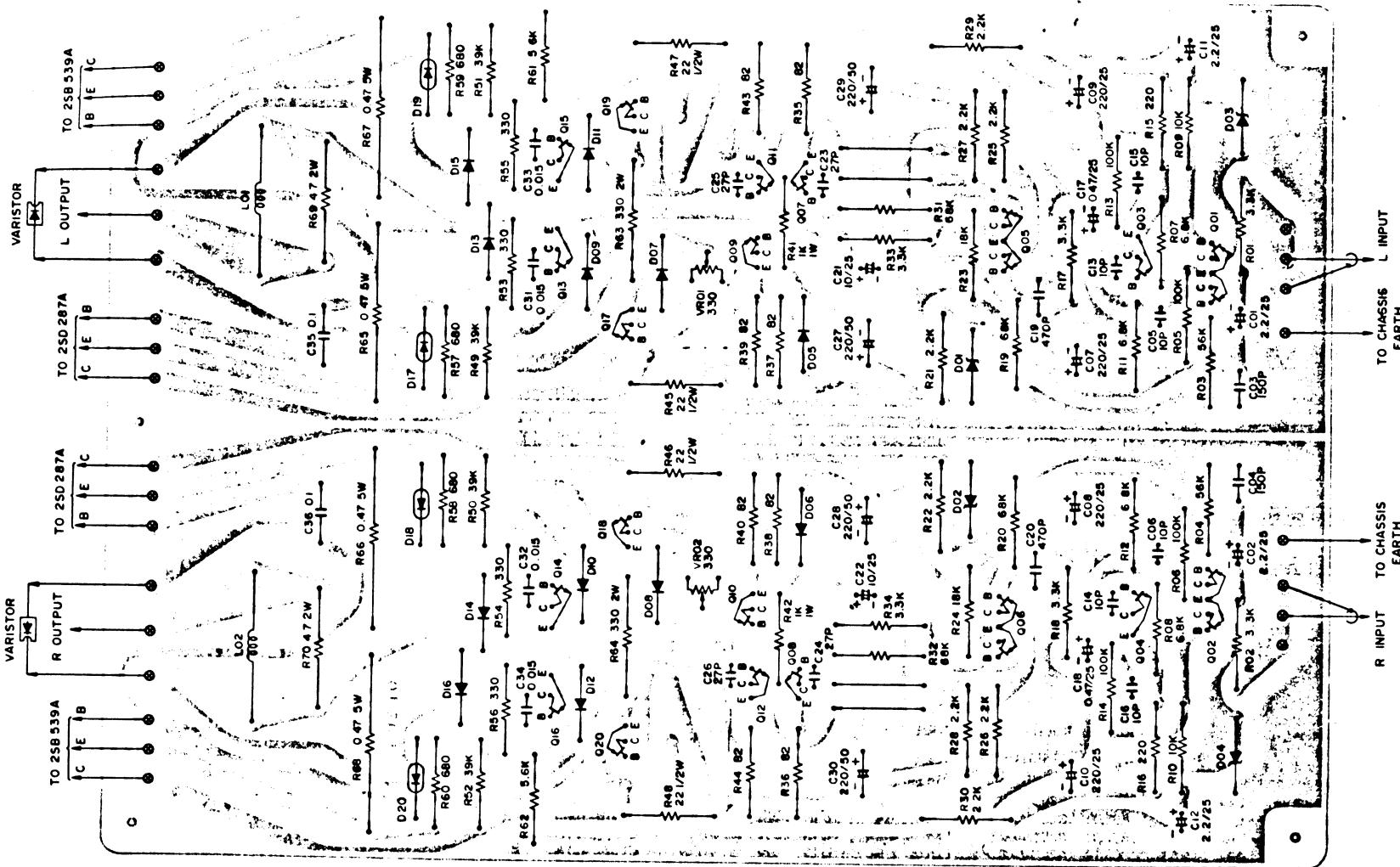


PARTS LIST

POWER AMP PCB Assy
1310 4001 72803

Ref. No.	Part Number	Description	Ref. No.	Part Number	Description
L01,02	4 2539 20281	Coil 2 μ H	R01,02	R2EDVJ332A	Carbon 3.3k 1/4W \pm 5 %
VR01,02	4 2229 25500	VR B-330x1	R03,04	R2EDVJ563A	Carbon 56k 1/4W \pm 5 %
CAPACITORS					
C01,02	C1EUEM 225A	Alsicon 2.2 μ F 25V \pm 20 %	R05,06	R2EDVJ104A	Carbon 100k 1/4W \pm 5 %
C03,04	C1HCDK151SL	Ceramic 150pF 50V \pm 10 %	R07,08	R2EDVJ682A	Carbon 6.8k 1/4W \pm 5 %
C05,06	C1HCDL100SL	Ceramic 10pF 50V \pm 0.5 %	R09,10	R2EDVJ103A	Carbon 10k 1/4W \pm 5 %
C07,08	C1ERB-227A	Electrolytic 220 μ F 25V	R11,12	R2EDVJ682A	Carbon 6.8k 1/4W \pm 5 %
09,10			R13,14	R2EDVJ104A	Carbon 100k 1/4W \pm 5 %
C11,12	C1EUEM225A	Alsicon 2.2 μ F 25V \pm 20 %	R15,16	R2EDVJ221A	Carbon 220 1/4W \pm 5 %
C13,14	C1HCDL100SL	Ceramic 10pF 50V \pm 0.5 %	R17,18	R2EDVJ332A	Carbon 3.3k 1/4W \pm 5 %
15,16			R19,20	R2EDVJ683A	Carbon 68k 1/4W \pm 5 %
C17,18	C1EUEM474A	Alsicon 0.47 μ F 25V \pm 20 %	R21,22	R2EDVJ222A	Carbon 2.2k 1/4W \pm 5 %
C19,20	C1HCDK471SL	Ceramic 470pF 50V \pm 10 %	R23,24	R2EDVJ183A	Carbon 18k 1/4W \pm 5 %
C21,22	C1ERB-106A	Electrolytic 10 μ F 25V	R25,26	R2EDVJ222A	Carbon 2.2k 1/4W \pm 5 %
C23,24	C1HCDK270SL	Ceramic 27pF 50V \pm 10 %	27,28		
26			29,30		
C28	C1HRB-227A	Electrolytic 220 μ F 50V	R31,32	R2EDVJ683A	Carbon 68k 1/4W \pm 5 %
29,30			R33,34	R2EDVJ332A	Carbon 3.3k 1/4W \pm 5 %
C31,32	C1HFRM153A	Mylar 0.015 μ F 50V \pm 20 %	R35,36	R2EDVJ820A	Carbon 82 1/4W \pm 5 %
33,34			37,38		
C35,36	C1HFRM104A	Mylar 0.1 μ F 50V \pm 20 %	39,40		
SEMICONDUCTORS					
D01,02	DJJ-WZ-210	Diode WZ-210	R41,42	R3AXBJ102A	Oxide Metal Film 1k 1W \pm 5 %
03,04			R43,44	R2EDVJ820A	Carbon 82 1/4W \pm 5 %
D05,06	2055 9040 44210	Diode DS-442	R45,46	R2HZPK220A	Fuse 22 1/2W \pm 10 %
07,08			47,48		
09,10			R49,50	R2EDVJ393A	Carbon 39k 1/4W \pm 5 %
11,12			51,52		
13,14			R53,54	R2EDVJ331A	Carbon 330 1/4W \pm 5 %
15,16			55,56		
Q01,02	TMM-2SA798--F	TR 2SA798 F	R57,58	R2EDVJ681A	Carbon 680 1/4W \pm 5 %
Q03,04	2035 5151 57079	TR 2SA1570 LG	59,60		
Q05,06	TMM-2SA798--F	TR 2SA798 F	R61,62	R2EDVJ562A	Carbon 5.6k 1/4W \pm 5 %
Q07,08	2035 4900 60040	TR 2SD600 D	R63,64	R3DXBJ331A	Oxide Metal Film 330 2W \pm 5 %
Q09,10	2035 4910 63140	TR 2SB631 D	R65,66	R3HEPKR47A	Cement 0.47 5W \pm 10 %
11,12	2035 4900 60040	TR 2SD600 D	67,68		
Q13,14	2035 6701 17550	TR 2SC1175 E	R69,70	R3DXBJ4R7A	Oxide Metal Film 4.7 2W \pm 5 %
Q15,16	2035 6800 65950	TR 2SA659 E			
Q17,18	TMM-2SD358-D	TR 2SD358 D			
Q19,20	TMM-2SB528-D	TR 2SB528 D			

POWER AMP P.C. BOARD



TRANSISTOR DC VOLTAGES						
SYMBOL NO	DEVICE	B	C	E	C	B
Q01,02	2SA798	0.012V	-19.4V	0.59V	-20.9V	0.01V
Q03,04	2SC1570	-19.4V	-0.03V	-20.6V		
Q05,06	2SA798	0.069V	-42.5V	0.688V	-42.5V	0.075V
Q07,08	2SC6600	-51.7V	-31.9V	-52.1V		
Q09,10	2SB631	52.1V	1.18V	43.3V		

SYMBOL NO	DEVICE	B	C	E
Q11,12	2SD1600	-51.2V	-1.21V	
Q13,14	2SC1175	0.292V	0.95V	-0.94V
Q15,16	2SA659	-0.292V	-0.78V	-0.94V
Q17,18	2SD358	1.18V	53.9V	0.2V
Q19,20	2SB631B	-1.21V	-53.9V	-0.6V

TRANSISTOR FRONT VIEW



• Q01,02
05,06
2SA798

• Q03,04
2SC1570

• Q11,12
2SD1600

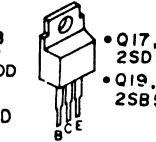
• Q13,14
2SC1175

• Q15,16
2SA659

• Q17,18
2SD358

• Q19,20
2SB631B

BOTTOM VIEW DIODE FRONT VIEW

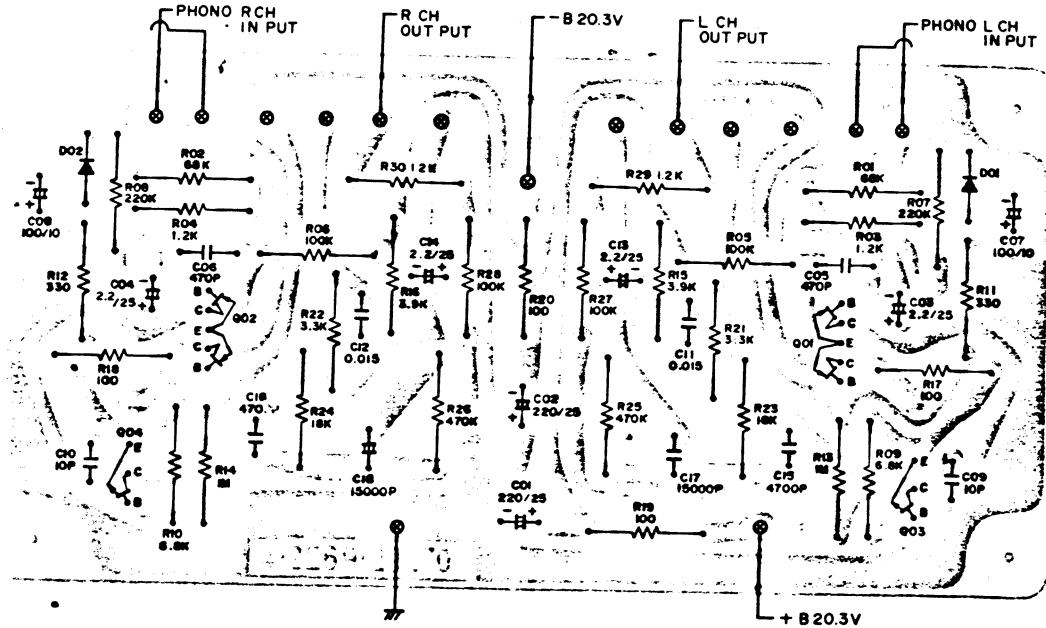


• DOI-04
WZ210

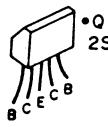
• D05-16
DS-442

• D17~20
SV-04

EQ P.C. BOARD

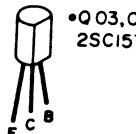


TRANSISTOR FRONT VIEW



• Q01,02
2SA798

DIODE FRONT VIEW



• Q03,04
2SC1570

DS-442

BOTTOM VIEW

TRANSISTOR DC VOLTAGES						
SYMBOL NO.	DEVICE	B	C	E	C	B
Q01,02	2SA798	0.45V	-18.7V	0.61V	-19.3V	0.05V
Q03,04	2SC1570	-18.7V	-0.04V	-18.8V		

PARTS LIST

EQ PCB Assy
1310 4001 73101

Ref. No. Part Number Description

Ref. No. Part Number Description

CAPACITORS

RESISTORS

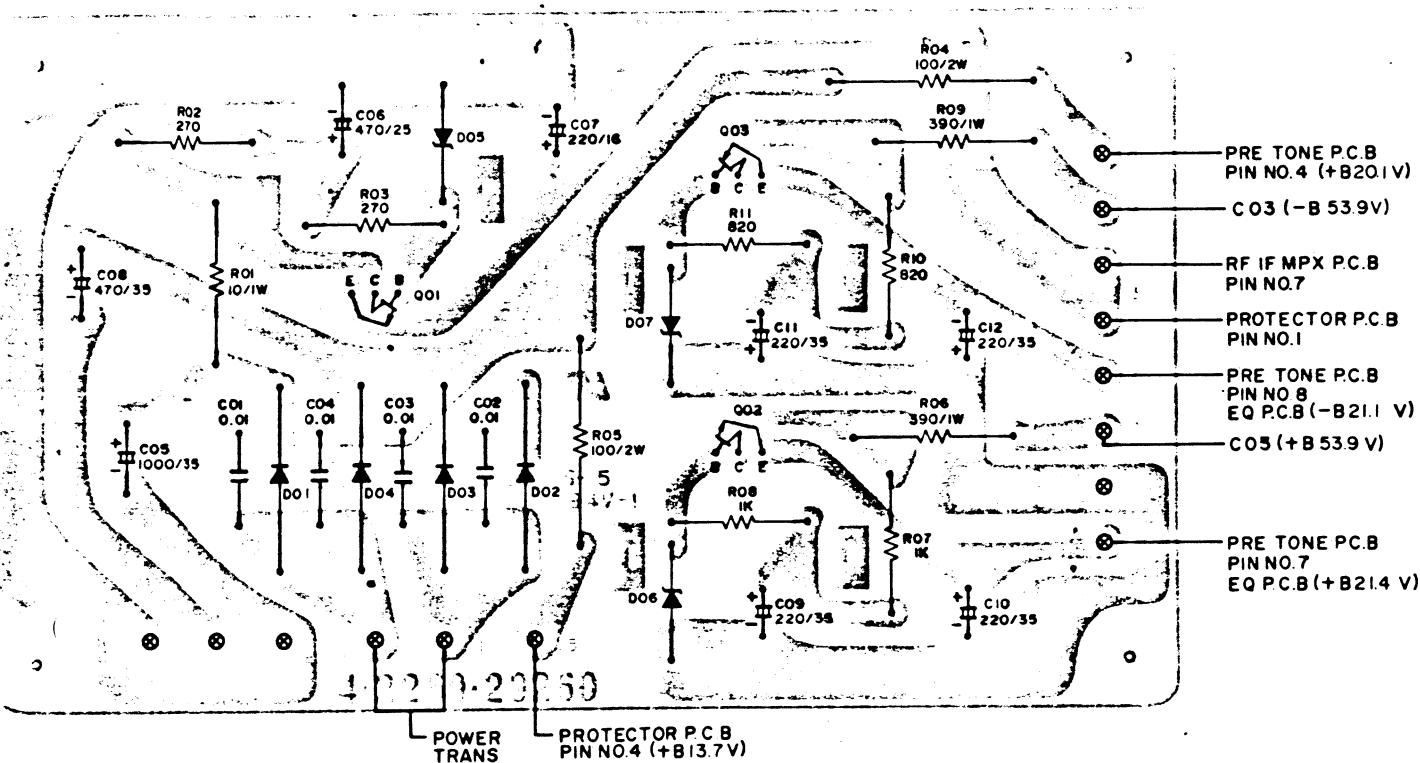
C01,02	C1ERE-227A	Electrolytic 220 μ F 25V	R01,02	R2EDVJ683A	Carbon 68k	1/4W $\pm 5\%$
C03,04	C1EUEM225A	Alsicon 2.2 μ F 25V $\pm 20\%$	R03,04	R2EDVJ122A	Carbon 1.2k	1/4W $\pm 5\%$
C05,06	C1HCDK471SL	Ceramic 470pF 50V $\pm 10\%$	R05,06	R2EDVJ104A	Carbon 100k	1/4W $\pm 5\%$
C07,08	C1ARE-107A	Electrolytic 100 μ F 10V	R07,08	R2EDVJ224A	Carbon 220k	1/4W $\pm 5\%$
C09,10	C1HCSD100SL	Ceramic 10pF 50V $\pm 0.5\%$	R09,10	R2EDVJ682A	Carbon 6.8k	1/4W $\pm 5\%$
C11,12	C1HFRM273A	Mylar 0.015 μ F 50V $\pm 20\%$	R11,12	R2EDVJ331A	Carbon 330	1/4W $\pm 5\%$
C13,14	C1EUEM225A	Alsicon 2.2 μ F 25V $\pm 20\%$	R13,14	R2EDVJ105A	Carbon 1M	1/4W $\pm 5\%$
C15,16	C1HSEJ472A	Styrol 4700pF 50V $\pm 5\%$	R15,16	R2EDVJ392A	Carbon 3.9k	1/4W $\pm 5\%$
C17,18	C1HSEJ153A	Styrol 15000pF 50V $\pm 5\%$	R17,18	R2EDVJ101A	Carbon 100	1/4W $\pm 5\%$

RESISTORS

D01,02	2055 9040 44210	Diode DS-442
Q01,02	TMM-2SA798-F	TR 2SA798 F
Q03,04	2035 5151 57079	TR 2SC1570 LG

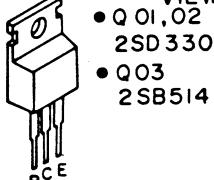
R21,22	R2EDVJ332A	Carbon 3.3k	1/4W $\pm 5\%$
R23,24	R2EDVJ183A	Carbon 18k	1/4W $\pm 5\%$
R25,26	R2EDVJ474A	Carbon 470k	1/4W $\pm 5\%$
R27,28	R2EDVJ104A	Carbon 100k	1/4W $\pm 5\%$
R29,30	R2EDVJ122A	Carbon 1.2k	1/4W $\pm 5\%$

POWER SUPPLY P.C. BOARD



BOTTOM VIEW

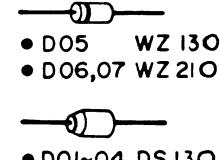
TRANSISTOR FRONT VIEW



TRANSISTOR FRONT VIEW

- Q01,02
2SD330
- Q03
2SB514

DIODE FRONT VIEW



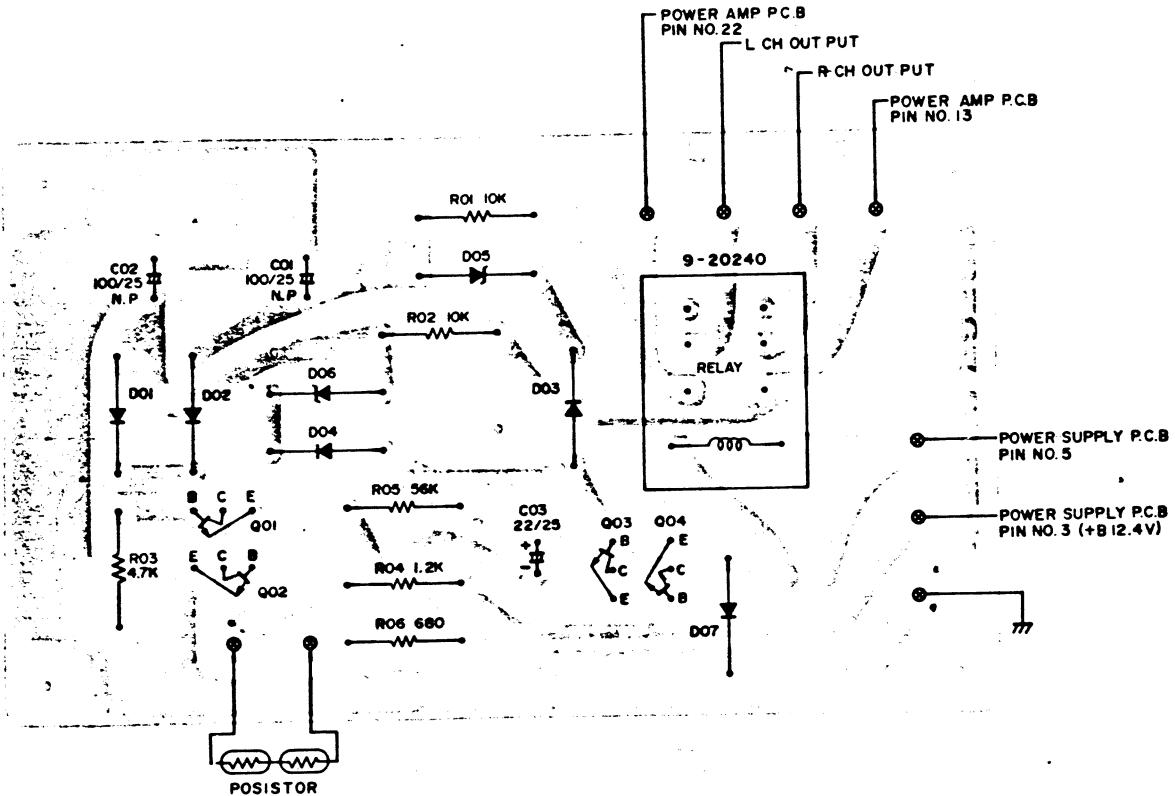
- D05 WZ130
- D06,07 WZ210
- D01~04 DS130

PARTS LIST

OWE SUPPLY PCB Assy
310 4001 73002

Ref. No.	Part Number	Description	Ref. No.	Part Number	Description
CAPACITORS					
01,02	C2HYDP103A	Ceramic 0.01 µF 500V +100,-0 %	R01	R3AXBJ100A	Oxide Metal Film 10 1W ±5 %
03,04			R02,03	R2EDVJ271A	Carbon 270 1/4W ±5 %
05	C1VRE-108A	Electrolytic 1000 µF 35V	R04,05	R3DXBJ101A	Oxide Metal Film 100 2W ±5 %
06	C1ERE-477A	Electrolytic 470 µF 25V	R06,09	R3AXBJ391A	Oxide Metal Film 390 1W ±5 %
07	C1CRE-227A	Electrolytic 220 µF 16V	R07,08	R2EDVJ102A	Carbon 1K 1/4W ±5 %
08	C1VRE-477A	Electrolytic 470 µF 35V	10,11		
09,10	C1VRE-227A	Electrolytic 220 µF 35V			
11,12					
SEMICONDUCTORS					
001,02	2025 2310 13020	Diode DS130YD			
03,04					
005	DJJ-WZ-130	Diode WZ-130			
006,07	DJJ-WZ-210	Diode WZ-210			
001,02	2035 8220 33050	TR 2SD330 E			
003	2035 6460 51440	TR 2SB514 D			

PROTECTOR P.C.B. BOARD

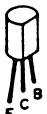


BOTTOM VIEW

TRANSISTOR DC VOLTAGES

SYMBOL NO.	DEVICE	B	C	E
Q01	2SC536	0.02V	5.55V	0.045V
Q02	2SC536	0.045V	5.55V	0V
Q03	2SC536	2.16V	1.62V	1.5V
Q04	2SC1175	1.5V	1.62V	0.74V

TRANSISTOR FRONT VIEW



- Q01 ~ 03 2SC536
- Q04 2SC1175

DIODE FRONT VIEW

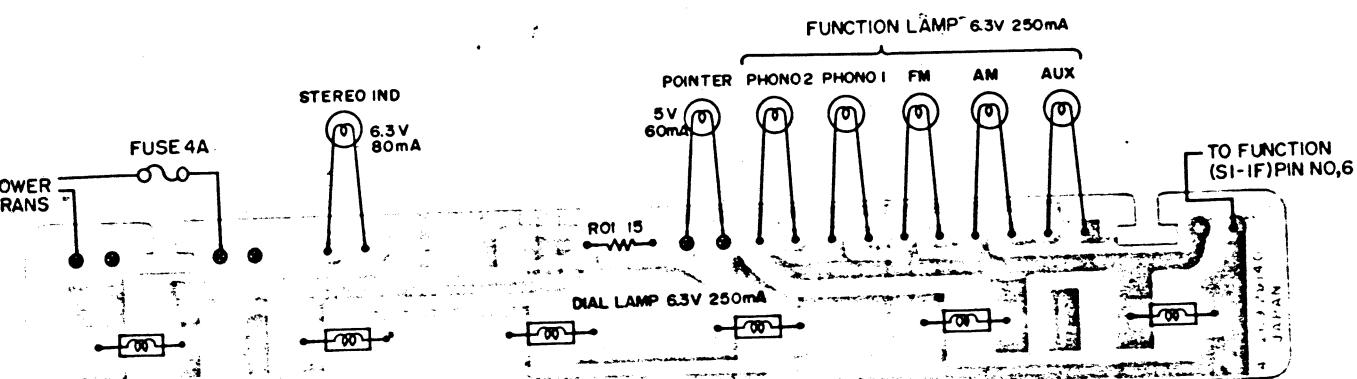
- D01~04 DS-442
- D05,06 RD-62E
- D07 DS-130

PARTS LIST

PROTECTOR PCB Assy
1310 4001 72900

Ref. No.	Part Number	Description	Ref. No.	Part Number	Description
	4 2329 20240	Relay			RESISTORS
CAPACITORS			R01,02	R2EDVJ103A	Carbon 10k 1/4W ± 5%
C01,02	C1EAEN107A	Electrolytic 100 μF 25V ± 30 %	R03	R2EDVJ472A	Carbon 4.7k 1/4W ± 5%
C03	C1ERE-226A	Electrolytic 22 μF 25V	R04	R2EDVJ122A	Carbon 1.2k 1/4W ± 5%
			R05	R2EDVJ563A	Carbon 56k 1/4W ± 5%
			R06	R2EDVJ681A	Carbon 680 1/4W ± 5%
SEMICONDUCTORS					
D01,02	2055 9040 44210	Diode DS-442			
03,04					
D05,06	DNN-RD6.2E	Diode RD-6.2 E			
D07	2025 2310 13020	Diode DS130 YD			
Q01,02	2035 5100 53650	TR 2SC536 E			
03					
Q04	2035 6701 17550	TR 2SC1175 E			

DIAL LAMP P.C.B. BOARD



BOTTOM VIEW

PARTS LIST

DIAL LAMP PCB Assy

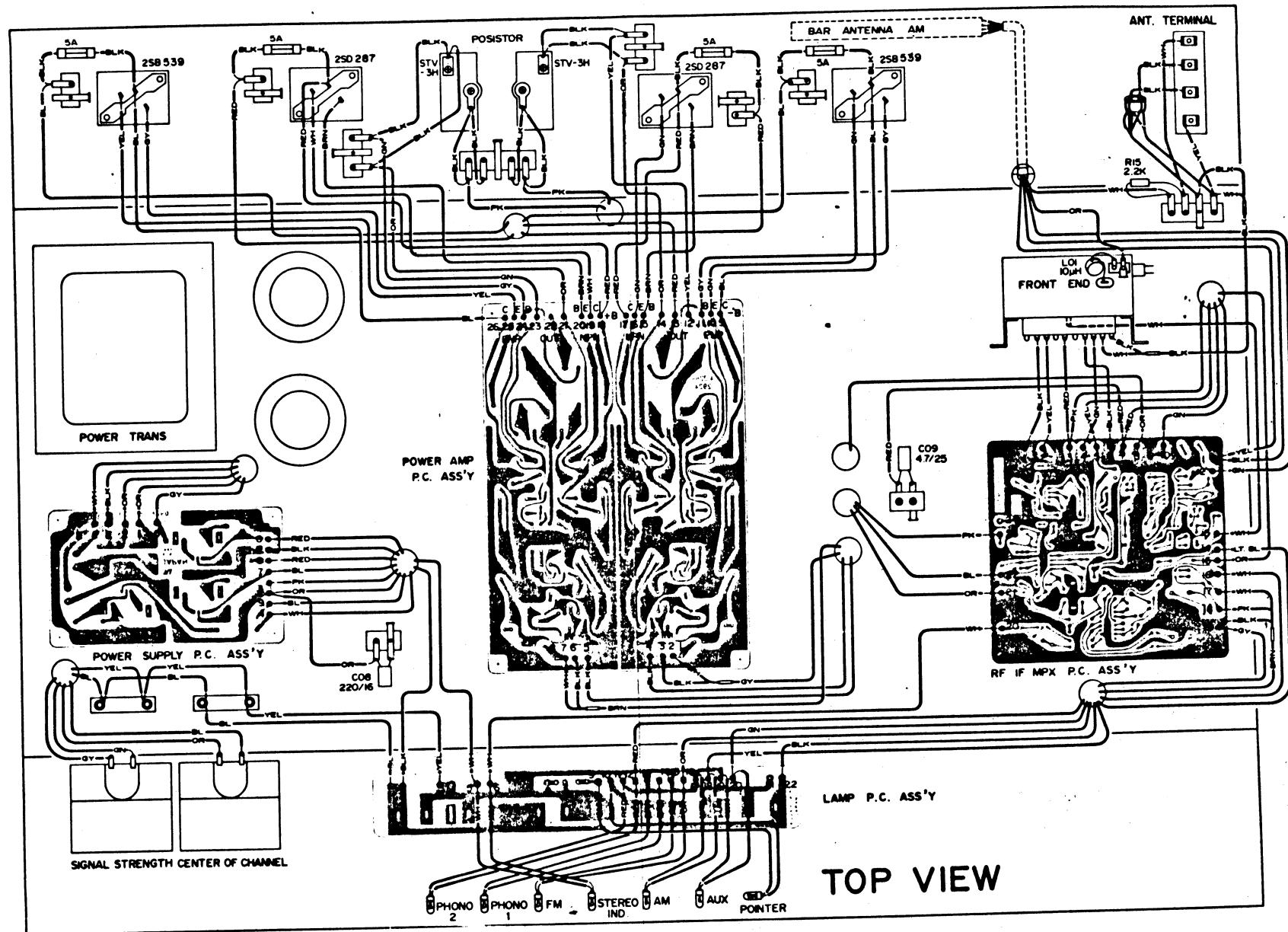
1310 4001 72163

Ref. No.	Part Number	Description
63	4 2359 20930	Lamp Holder
	4 6129 20219	Small Lamp IND 6.3V 80mA
	4 6129 20280	Pilot Lamp 6.3V 250mA (Dial Lamp) (Function Lamps)
81-1	4 6129 20430	Pilot Lamp 6.3V 80mA
81-2	4 6129 20431	Pilot Lamp 6.3V 80mA
81-3	4 6129 20432	Pilot Lamp 6.3V 80mA
81-4	4 6129 20216	Pilot Lamp 6.3V 80mA
81-5	4 6129 20433	Pilot Lamp 6.3V 80mA

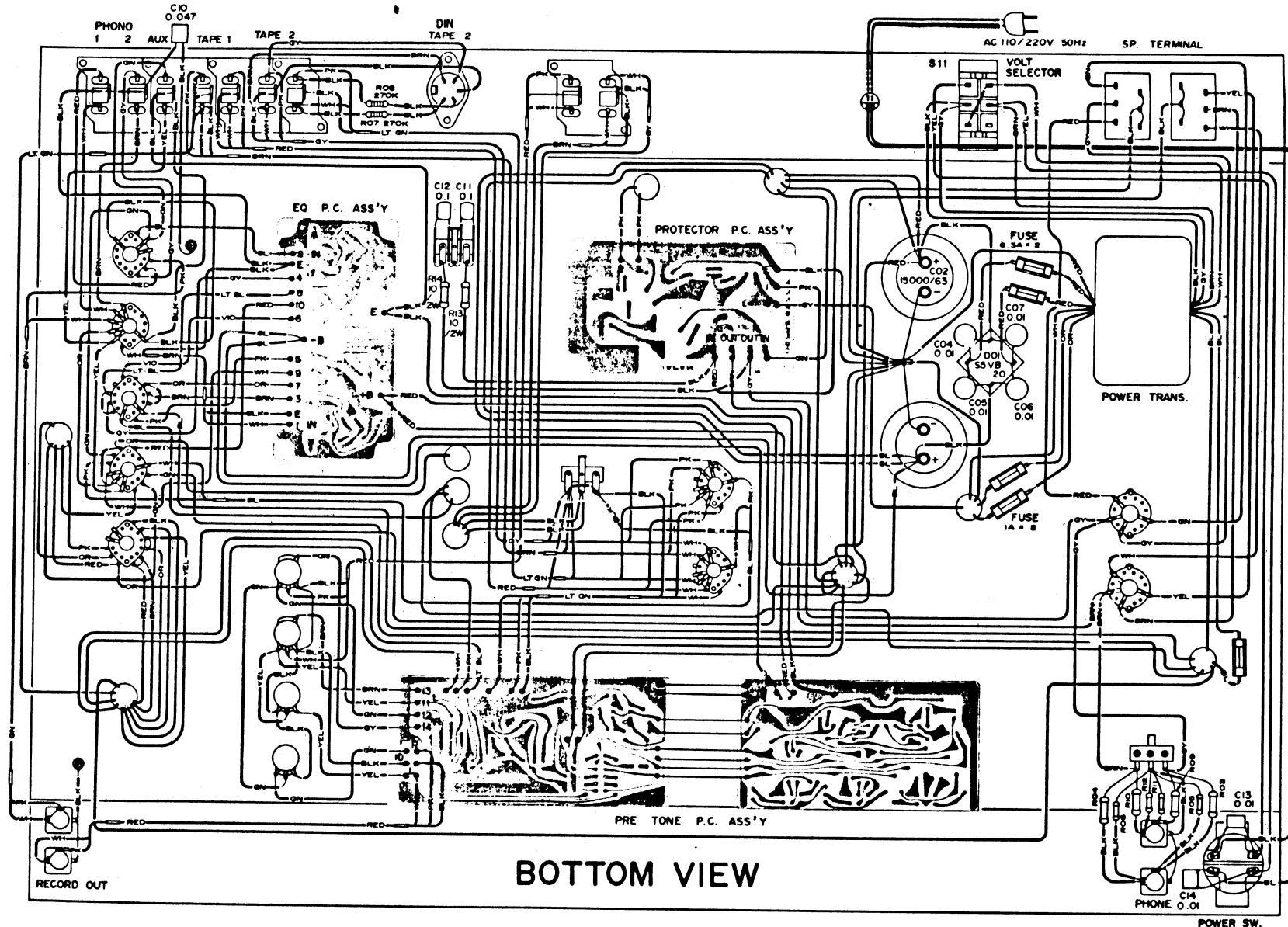
RESISTORS

R01	R2EDSJ150A	Carbon 15	1/4W ± 5 %
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POINT TO POINT WIRING DIAGRAM

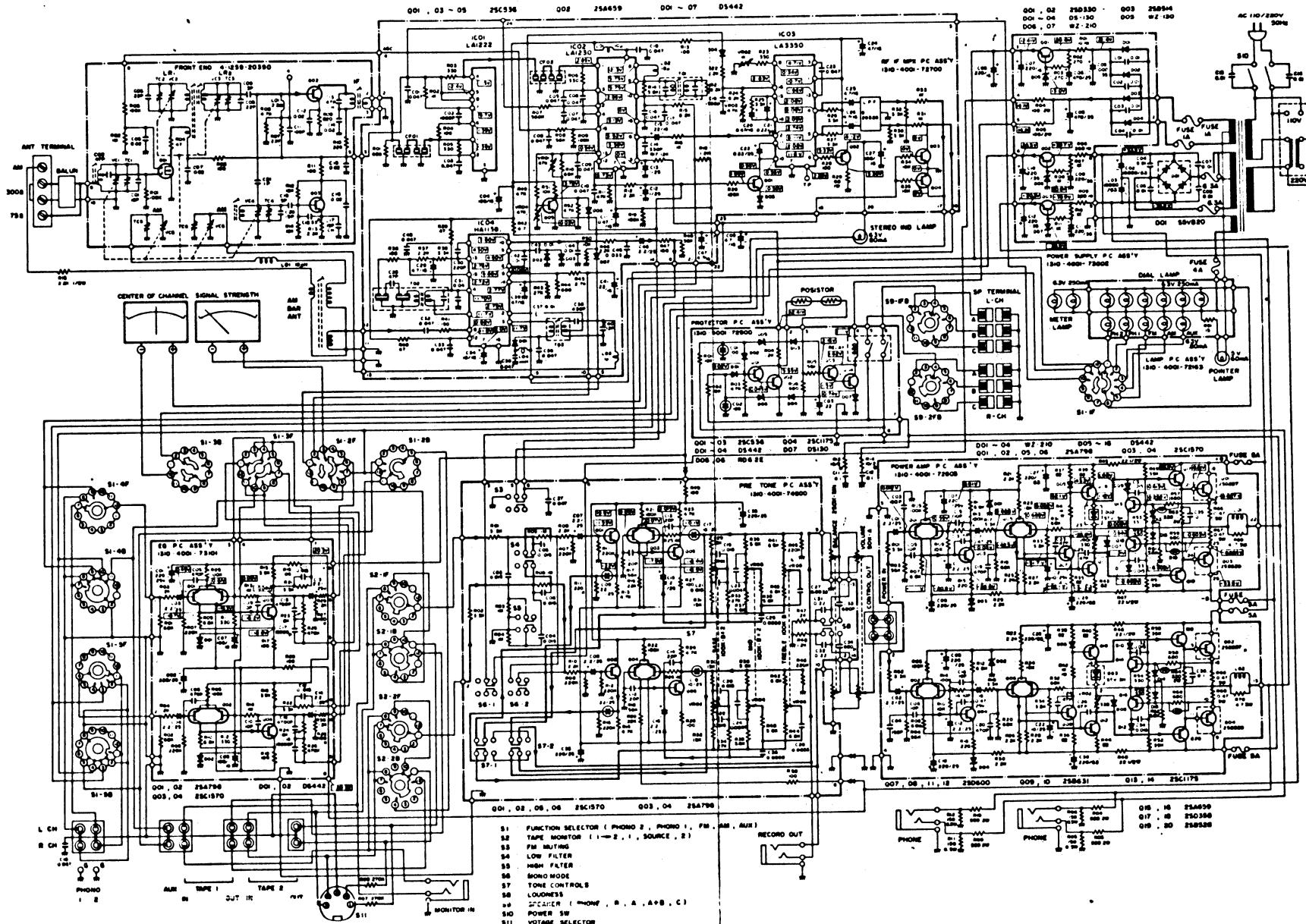


POINT TO POINT WIRING DIAGRAM



SCHEMATIC DIAGRAM

RS-1058



NOTES

PACKING PARTS LIST

Part Number	Description
1316 1139 61103	Box Corrugate-EXP
1316 2119 01351	Bag Polyethylene-EXP
1316 2119 01470	Bag Polyethylene-EXP
1316 3009 22150	Pad (Right)
1316 3009 22160	Pad (Left)

ACCESSORIES PARTS LIST

Part Number	Description
1316 4119 59005	Explanatory Booklet English
1316 4119 59007	Explanatory Booklet German
1316 4519 14700	Guarantee Certificate
4 2449 20230	Antenna FM